Craig Small Boat Harbor Navigation Improvements Draft Economics Appendix D

Craig, Alaska

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Alaska District

CRAIG SMALL BOAT HARBOR NAVIGATION IMPROVEMENTS
ECONOMICS APPENDIX B
CRAIG, ALASKA

CONTENTS

I. Overview of Region and Community 1
A. Problem Statement 1
B. Location and Setting 1
C. Climate 2
D. History 2
E. Demographics 3
1. Population 3
2. School Enrollment 5
3. Employment and Income 5
F. Infrastructure 8
1. Marine Facilities 8
2. Ferry 11
3. Airport 11
4. Utilities and Services 12
G. Government 12
II. Marine Resource Assessment 13
A. Overview 13
B. Fisheries Management Institutions 13
1. Board of Fisheries 14
2. Alaska Department of Fish and Game 14
3. Commercial Fisheries Entry Commission 14
4. National Marine Fisheries Service 15
5. North Pacific Fishery Management Council 15
6. Pacific States Marine Fisheries Commission 16
7. International Pacific Halibut Commission 16
8. Other Fishery Management Agencies 16
C. Fishery Management Techniques 16
D. Harvest Timelines and Periods of Operation for Fisheries 18
E. Commercial Fisheries 20
1. Types of vessels 20
2. Landed Weights and Ex-Vessel Values 22
3. Salmon 27
4. Herring 28
5. Other Shellfish 28
6. Other species 29
7. Local Processing Facilities 29
8. Outlook for Commercial Fisheries 30
F. Sport Fisheries 31
G. Subsistence Fisheries 32
H. Charter Fisheries 32

I. Fisheries Outlook Summary 33
III. Methodology 34
A. Evaluation Framework 34
B. Data Collection Techniques 34
1. Mail Survey 35
2. Interviews 36
3. Additional Research 36
IV. Existing Conditions 37
A. Current Harbor Facilities 37
B. Harbor Use 38
1. North Cove 38
2. South Cove 38
3. Vessels in Slips too Small 38
4. Wait Listed Vessels 39
5. Permanent Vessels 39
6. Transient Vessels 39
7. Boat Launch Users 40
C. Proximity to Other Harbors 40
D. Moorage Demand Analysis 43
1. Total Moorage Demand 43
2. Excess Moorage Demand 48
E. Current Harbor Conditions 49
1. Vessel Damages 50
2. Vessel Delays 50
3. Subsistence Harvests 51
4. Travel Costs 52
5. Damage to Existing Infrastructure 53
6. Recreational Opportunity – Unit Day Values 55
7. Recreational Delays – Opportunity Cost of Time 56
V. Future Without Project Conditions 57
A. Future of the Fleet 57
B. Future of Moorage Facilities 58
C. Assumptions 59
D. Vessel Damages 59
E. Vessel Delays 62
1. Vessel Delay Hours 62
2. Vessel Operating Costs 64
3. Opportunity Cost of Time 71
4. Total Vessel Delay Costs 73
F. Subsistence Harvests 74
G. Travel Costs 78
H. Infrastructure Damage 83
I. Recreational Opportunity 85
1. General or Specialized Recreational Activity 86
2. Craig Unit Day Value Results 86

3. Conversion of Points into Dollars....87
4. Harbor Use – Baseline Recreation Information....88
5. Expected Change in Recreational Use....89
6. Future Without Project Unit Day Values....90
J. Recreational Delays – Opportunity Cost of Time....91
K. Summary of Future Without-Project Conditions....93
VI. Alternatives Considered.... 94
A. Alternative Formulation....94
1. Additional Design Considerations....94
B. Alternatives Considered....94
1. Alternative 1....95
2. Alternative 2....95
3. Alternative 2a....95
4. Alternative 2b....96
5. Alternative 3....96
6. Alternative 4....96
C. Total Project Costs....97
VII. Future With Project Conditions.... 98
A. Assumptions....98
1. Future With Project Excess Moorage Demand and Costs by Alternative....98
B. Vessel Damages....102
C. Vessel Delays....106
D. Subsistence....110
E. Travel Costs....115
F. Infrastructure Damage....116
G. Recreational Opportunity – Unit Day Values....117
H. Recreational Delays – Opportunity Cost of Time....120
I. Summary of Future With-Project Conditions....122
VIII. Annual Benefits.... 123
A. Benefits by category....123
1. Vessel Damages....123
2. Vessel Delays....123
3. Subsistence....124
4. Travel Costs....124
5. Infrastructure Damage....124
6. Recreation – Unit Day Values....125
7. Recreation – Opportunity Cost of Time....125
B. Benefits by Alternative....126
IX. Summary of Benefits and Costs.... 129
X. Sensitivity Analysis.... 132
XI. Regional Economy.... 133
XII. Other Social Effects.... 134
XIII. Four Accounts Summary.... 135
XIV. Attachment – Craig Small Boat Harbor Survey Instrument and Survey Results Analysis 136

FIGURES

Figure B-1. Location of Craig in Alaska 2
Figure B-2. Craig Population, 2000 through 2013 3
Figure B-3. Craig, Percent of Population by age group, 2000 and 2010 comparison 4
Figure B-4. Craig City School District Total Enrollment, 1999-2014 5
Figure B-5. 2012 Craig Employment by Industry 6
Figure B-6. Existing Craig Marine Infrastructure 9
Figure B-7. South Cove Harbor 10
Figure B-8. North Cove Harbor 10
Figure B-9. Saltwater Fish Runtime Tables 18
Figure B-10. Freshwater Fish Runtime Tables 19
Figure B-11. Prince of Wales Island Historical Harvest 23
Figure B-12. Craig Residents Historical Harvest 25
Figure B-13. Species Harvest Percentages (total pounds landed) 2013 for Prince of Wales Island Residents 26
Figure B-14. Species Value Percentages (total value) 2013 for Prince of Wales Island Residents 27
Figure B-15. Silver Bay Seafoods processing plant 30
Figure B-16. Klawock Small Boat Harbor 42
Figure B-17. Example of boats rafting at Craig 2014 50
Figure B-18. Existing Docks in the area of proposed navigation improvements 54
Figure B-19. Examples of dock damages at Craig's North Cove Harbor 55
Figure B-20. Future Without Project Condition Average Cost per Vessel Damage, @Risk distribution 61
Figure B-21. Future Without Project Annual Vessel Damage Costs, @Risk simulation results 61
Figure B-22. Subsistence harvest value @Risk distribution 77
Figure B-23. Subsistence harvest value, @Risk simulation results 77
Figure B-24. Future With Project Condition Average Cost per unavoidable vessel damage, @Risk distribution 103
Figure B-25. Future With Project Annual Unavoidable Vessel Damage Costs, @Risk simulation results 104
Figure B-26. Subsistence harvest increase, @Risk distribution 113
Figure B-27. Subsistence harvest increase, @Risk simulation results 113

TABLES

Table B-1. Craig Worker Characteristics, 2012.....7
Table B-2. Vessel Characteristics for Craig Boat Owners 20
Table B-3. Additional Vessel Characteristics for Craig Boat Owners 21
Table B-4. Prince of Wales Island – All fisheries combined.....22
Table B-5. Craig Residents – All fisheries combined.....24
Table B-6. Southeast Alaska Salmon Statistics (2013 Salmon Season).....28
Table B-7. Southeast Alaska Registration Area A Shellfish Statistics.....29
Table B-8. Prince of Wales Island Sport Fish Hours per Harvest 31
Table B-9. Prince of Wales Island Subsistence Activity (1997) 32
Table B-10. Existing Craig moorage capacity.....37
Table B-11. North Cove Harbor slips and usage 38
Table B-12. South Cove Harbor slips and usage 38
Table B-13. Vessels in slips too small (by vessel length, not slip size), North and South Cove Harbors.....38
Table B-14. Craig Waitlist, by vessel length 39
Table B-15. Wait times (average, maximum, and minimum) by slip length.....39
Table B-16. Number of Transient Vessels which used Craig in 2012.....40
Table B-17. Craig Survey Respondents Vessel Homeports 41
Table B-18. Distances between Craig and nearby harbors 41
Table B-19. Ketchikan Small Boat Harbor Capacity.....42
Table B-20. Ketchikan Small Boat Harbor Waitlist, 2003-2011.....43
Table B-21. Petersburg Small Boat Harbors Capacity 43
Table B-22. Moorage demand for survey respondents with Craig home addresses – survey sample data.....45
Table B-23. Expected Total Craig Moorage Demand 47
Table B-24. Craig Moorage Demand, by moorage type.....47
Table B-25. Craig excess moorage demand, Method 1 (low) 48
Table B-26. Craig North Cove and South Cove Harbors, current usage and open slips.....49
Table B-27. Craig Total Moorage Demand Summary.....49
Table B-28. Craig excess moorage demand, method 2 (high).....49
Table B-29. Craig Harbor Delays in 2012 51
Table B-30. Current moorage at Craig 52
Table B-31. Those who would seek permanent moorage if it was available 52
Table B-32. Craig Vessel Primary Purpose 55
Table B-33. Craig Harbor Delays, 2012, for Recreation boats and yachts.....56
Table B-34. Total Craig Moorage Demand, Future Without Project Condition 58
Table B-35. Craig Moorage Facilities, Future Without Project Condition.....59
Table B-36. Vessels Damaged by moorage type 60
Table B-37. Craig Small Boat Harbor Survey results – vessel damages per year and costs 60
Table B-38. Future Without Project Condition Vessel Damages, by moorage type 62
Table B-39. Delay Hours caused by Waiting for Tide Change, extrapolation of survey sample 63

Table B-40. Total Delay Hours, Future Without Project Condition 64
Table B-41. Craig vessels, average investment costs and characteristics 65
Table B-42. Craig vessels, operating and season length assumptions 66
Table B-43. Annual Fixed Operating Costs for the Craig Fleet 68
Table B-44. Annual Variable Costs, Craig Fleet 70
Table B-45. Hourly Variable Cost Summary for Craig Commercial Fishing Vessels 71
Table B-46. Hourly Variable Cost Summary for Craig Charter Fishing Vessels 71
Table B-47. Charter Vessel Wage and Opportunity Cost of Time Rates 72
Table B-48. Future Without Project Condition Vessel Delay Costs 73
Table B-49. Prince of Wales Island, Alaska Population Projections, 2012-2042 74
Table B-50. Craig population and estimated future without project subsistence harvest, for selected project years 75
Table B-51. Craig future without project subsistence harvest, by moorage type 75
Table B-52. Protein replacement values from Craig grocery stores 76
Table B-53. Future Without Project Subsistence Harvest Values, for selected project years . 78
Table B-54. Commercial fishing vessels without Craig home addresses, by region of origin, survey proportion and expected population 79
Table B-55. Average Distance between Craig and selected regions 79
Table B-56. Number of commercial fishing vessels which could relocate to Craig, by region of origin and vessel size class 80
Table B-57. Average Vessel Cruising Speed, in knots, Commercial Fishing Vessels, by vessel length 80
Table B-58. Round Trip Travel Costs – Vessels not homeported at Craig, and without Craig home address 81
Table B-59. Future Without Project Travel Costs – Vessels not homeported at Craig, with Craig home addresses 83
Table B-60. Seldovia Small Boat Harbor Infrastructure characteristics 84
Table B-61. Existing Craig small boat harbor infrastructure and estimated replacement costs 85
Table B-62. Unit Day Values Without and With-Project Conditions, Craig 87
Table B-63. Points and Unit Day Values for Craig Harbor, Future Without and With Project Conditions 88
Table B-64. Recreation Angler Days, Prince of Wales Island, Saltwater 88
Table B-65. Craig Charter vessels and passengers 89
Table B-66. Average Annual Population Change, Prince of Wales Island 90
Table B-67. Craig Recreational Visitation for selected project years 90
Table B-68. Unit Day Values for Craig Small Boat Harbor Future Without-Project Condition 91
Table B-69. Number of responses, by delay category, for recreation, yachts, and “other” vessels 91
Table B-70. Delay hours for categories not extrapolated 92
Table B-71. Extrapolated delay hours for “Another boat moved from my stall” 92
Table B-72. Summary of Future Without-Project Conditions 93
Table B-73. Total Project Costs, by Alternative 97
Table B-74. Craig Harbor FWOP excess moorage demand, Low scenario 98

Table B-75. Craig Harbor FWOP excess moorage demand, High scenario.....99
Table B-76. Revised Craig Harbor FWOP excess moorage demand, High scenario, transient vessels only 99
Table B-77. Slip Configurations, by Alternative (moorage supply).....100
Table B-78. Revised slip availability at Craig 100
Table B-79. Total Moorage Availability at Craig.....101
Table B-80. Craig moorage demand by moorage type 101
Table B-81. Available slips after accommodating permanent moorage.....101
Table B-82. Transient moorage demand met, by alternative.....102
Table B-83. Future With Project, Vessels experiencing unavoidable damages 103
Table B-84. Future With Project Unavoidable vessel damages, by moorage type.....104
Table B-85. Permanent moorage demand met and remaining vessel damage costs 105
Table B-86. Transient moorage demand met and remaining damage costs 105
Table B-87. Boat Launch moorage demand met and remaining damage costs.....105
Table B-88. Total Annual Future with-Project Vessel Damage Costs, by alternative 106
Table B-89. Future With-Project Vessel Damage Costs, by Alternative 106
Table B-90. Vessel Delay categories and expected effect of navigation improvements.....106
Table B-91. Total Future With-Project Delay Hours, only delays which will occur regardless of navigation improvements 108
Table B-92. Cost of Future With-Project Vessel Delays, only delays which will occur regardless of navigation improvements 108
Table B-93. Permanent Moorage Demand met and Future With-Project delay costs.....109
Table B-94. Transient Moorage Demand met and Future With-Project delay costs.....109
Table B-95. Boat Launch Moorage Demand met and Future With-Project delay costs 109
Table B-96. Total Future With-Project Vessel Delay Costs.....110
Table B-97. Future With-Project Vessel Delay Costs, by Alternative 110
Table B-98. Population and Marine Facilities of Prince of Wales Island Communities.....111
Table B-99. Comparison of Subsistence Harvest Data, Prince of Wales Island Communities 112
Table B-100. Moorage Demand met by alternative, vessels 36 feet and less 114
Table B-101. Craig estimated future with-project subsistence harvest, by alternative, for selected harvest years.....114
Table B-102. Future With-Project Subsistence Harvest Values, by alternative for selected project years 115
Table B-103. Future With-Project Value of Craig Subsistence Harvests, by alternative.....115
Table B-104. Annual FWP Vessel Travel Costs, by alternative.....116
Table B-105. Future With-Project Vessel Travel Costs, by alternative 116
Table B-106. Future With-Project Infrastructure Damage Costs, by alternative 117
Table B-107. Unit Day Values Without- and With-Project Conditions, Craig 118
Table B-108. Points and Unit Day Values for Craig Harbor, Future Without- and Future With-Project Conditions.....119
Table B-109. Craig Recreational Visitation for selected project years 119
Table B-110. Unit Day Values for Craig Small Boat Harbor Future With-Project Condition 120
Table B-111. Future With-Project Recreation Unit Day Values for each alternative 120

Table B-112. Vessel Delay categories and expected effect of navigation improvements 121
Table B-113. Recreation Vessel Delay Hours, Future Without- and Future With-Project Condition 121
Table B-114. Future With-Project Recreation Delay Opportunity Cost of Time for each alternative 122
Table B-115. Summary of Future With-Project Costs 122
Table B-116. Vessel Damages, Average Annual Values 123
Table B-117. Vessel Delays, Average Annual Values 123
Table B-118. Subsistence, Average Annual Values 124
Table B-119. Travel Costs, Average Annual Values 124
Table B-120. Infrastructure Damage, Average Annual Values 124
Table B-121. Recreation UDV, Average Annual Values 125
Table B-122. Recreation OCT, Average Annual Values 125
Table B-123. Alternative 1 Benefits Summary 126
Table B-124. Alternative 2 Benefits Summary 126
Table B-125. Alternative 2a Benefits Summary 127
Table B-126. Alternative 2b Benefits Summary 127
Table B-127. Alternative 3 Benefits Summary 128
Table B-128. Alternative 4 Benefits Summary 128
Table B-129. Summary of Benefits by alternative 129
Table B-130. Summary of Costs by alternative 130
Table B-131. Summary of Benefits and Costs, by alternative 131

I. OVERVIEW OF REGION AND COMMUNITY

This section provides general background information pertaining to the socioeconomic composition of the study area. This information enables planners and report reviewers to understand the community, infrastructure, the level of economic activity generated, and the potential of the area to support the project under consideration.

A. Problem Statement

The problem statement for this study, as defined at the planning charette, is: Insufficient moorage creates overcrowded conditions and inadequate upland facilities services cause operational inefficiencies, damage to vessels and marine infrastructure, and lost economic opportunities at Craig, Alaska.

B. Location and Setting

Craig is located on a small island off the west coast of Prince of Wales Island and is connected by a small causeway. Craig is 56 air miles northwest of Ketchikan, 750 air miles north of Seattle, Washington, and 220 miles south of Alaska's state capital Juneau. It lies at approximately 55.47 degrees North latitude, and -133.15 degrees West longitude. Craig is in the Ketchikan recording district. The community encompasses 6.7 square miles of land and 2.7 square miles of water.[1] Figure B-1 shows the location of Craig in Alaska.

[1] State of Alaska Division of Community and Regional Affairs. Community Database Online – Craig. http://commerce.alaska.gov/cra/DCRAExternal/community/Details/03f82d00-0463-4dfc-b0e5-536ef93f176e

Figure B-1. Location of Craig in Alaska

Source: ©Google Earth. Citation added by the Alaska District.

C. Climate

Prince of Wales Island is dominated by a cool, moist, maritime climate. Summer temperatures range from 49 to 63 degrees Fahrenheit. Winter temperatures range from 32 to 42 degrees F. Average annual precipitation is 120 inches, and average annual snowfall is 40 inches. Gale winds are common in the fall and winter months.[2]

D. History

The Tlingit and Haida peoples have historically used the area around Craig for its rich resources. With the help of local Haidas, a fish saltery was built on nearby Fish Egg Island in 1907 by Craig Miller. Between 1908 and 1911, he constructed the Lyndenburger Packing Company and cold storage plant at the present site of Craig. In 1912, a post office, school, sawmill, and salmon cannery were constructed. Production at the cannery and sawmill peaked during World War I. A city government was formed in 1922. Excellent pink salmon runs contributed to development and growth through the late 1930s. Some families from the Dust Bowl relocated to Craig during this time. During the 1950s, the fishing industry collapsed due to depleted salmon runs. In 1972, Ed Head built a large sawmill six miles from Craig near Klawock, which provided year-round jobs and helped to stabilize the economy. Head Mill was sold in the early 1990s to Viking Lumber. Today, Craig is predominantly a fishing community.[3]

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[2] Ibid.

[3] Ibid.

E. Demographics

The following demographic information provides relevant characteristics to the local economy: population, age distribution, race and ethnicity, local school enrollment, employment, household and per capita income, and poverty status.

1. Population

According to the 2010 US Census, Craig is home to 1,201 people. In 2013, the State of Alaska estimated the population of Craig to be 1,195 persons.[4] The population has been relatively stable since 2000. The 2000 Census showed Craig's population to be 1,397 persons. The State of Alaska estimated that Craig's population dropped to 1,250 people in 2001, and the population has remained steadily in the 1,100 to 1,300 people range in the intervening years. The maximum population since 2001 was 1,251 people in 2011, while the minimum was 1,120 in 2007. Figure B-2 shows the population of the City of Craig for the years 2000 through 2013.

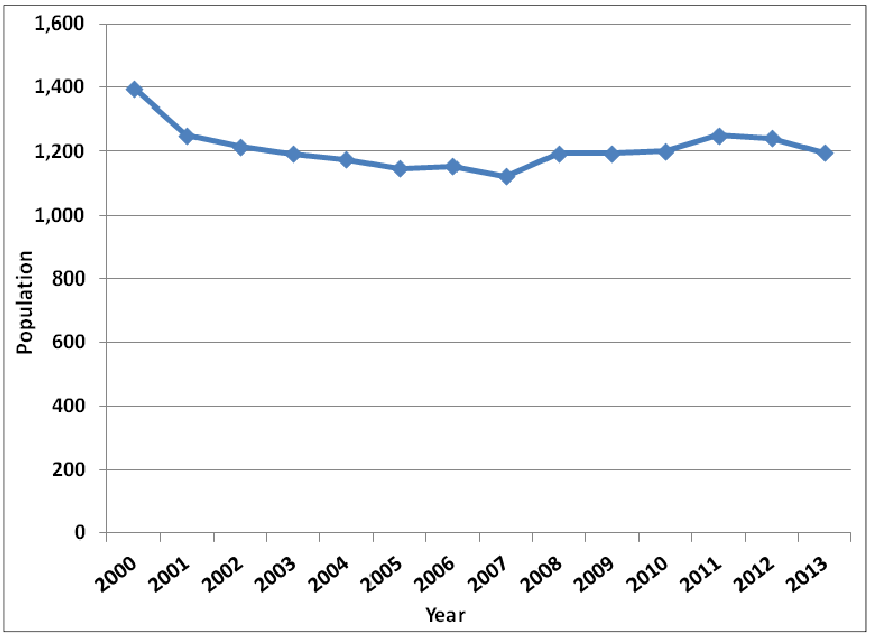

Figure B-2. Craig Population, 2000 through 2013

Source: State of Alaska Department of Labor and Workforce Development, Research and Analysis Section.

[4] State of Alaska Department of Labor and Workforce Development, Research and Analysis Section, population estimates. http://laborstats.alaska.gov/pop/popest.htm

According to the 2010 Census, the population of Craig consists of 23 percent Alaska Native. This is compared to 16.0 percent for the State of Alaska.[5] The majority of the population in Craig is listed as white, at 75 percent. The gender breakdown of Craig's population was approximately 55 percent male and 45 percent female compared to 52 percent male and 48 percent female in the State of Alaska. The median age of Craig residents is 36.4 years. This suggests a relatively older population than the rest of the state. The 2010 median age for the State of Alaska is 33.8 years.

Figure B-3 shows a comparison of the Craig population by age groups as reported by the 2000 and 2010 Censuses. This data shows the population of Craig has aged between 2000 and 2010. According to Census data, 72 percent of Craig's population was 44 years or younger in 2000 compared to only 62 percent of the population in 2010.[6]

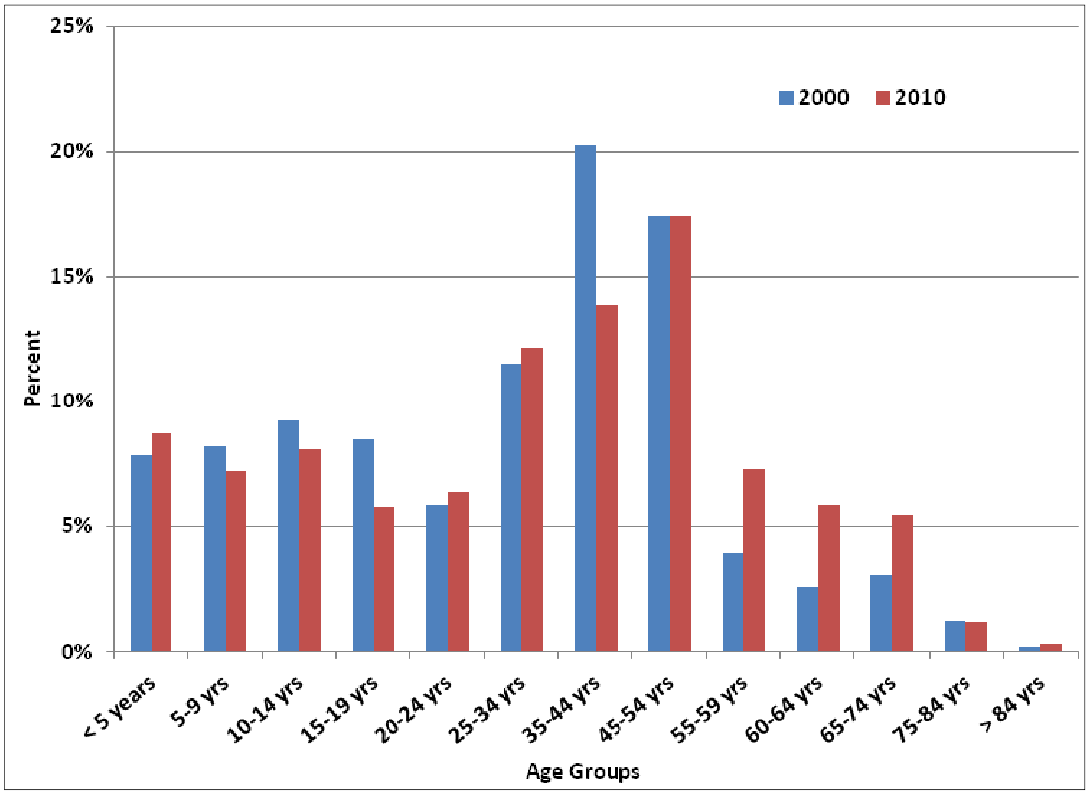

Figure B-3. Craig, Percent of Population by age group, 2000 and 2010 comparison

Source: US Census, 2000 and 2010

[5] The 2010 US Census is the most recent data available for employment and income levels. The figures are estimates based on a sample, and are subject to sampling variability.

[6] 2000 and 2010 US Census Data accessed via the State of Alaska Department of Labor and Workforce Development, Research and Analysis Section.

2. School Enrollment

There are five schools in Craig; all are part of the Craig City School District: Craig Alternative High School serves grades 9 through 12; Craig Elementary School, grades Pre-K through 5; Craig High School, grades 9 through 12; Craig Middle School, grades 6 through 8; and PACE Correspondence School, grades K through 12. Total enrollment in the Craig City School District Schools was 587 students as of Fiscal Year 2014. Looking to recent history, school enrollment peaked in fiscal year 2004 with an enrollment of 974 students, and has shown a decreasing trend since that time.[7] This decrease in school enrollment could be due, at least in part, to the aging Craig population as described in the previous section.

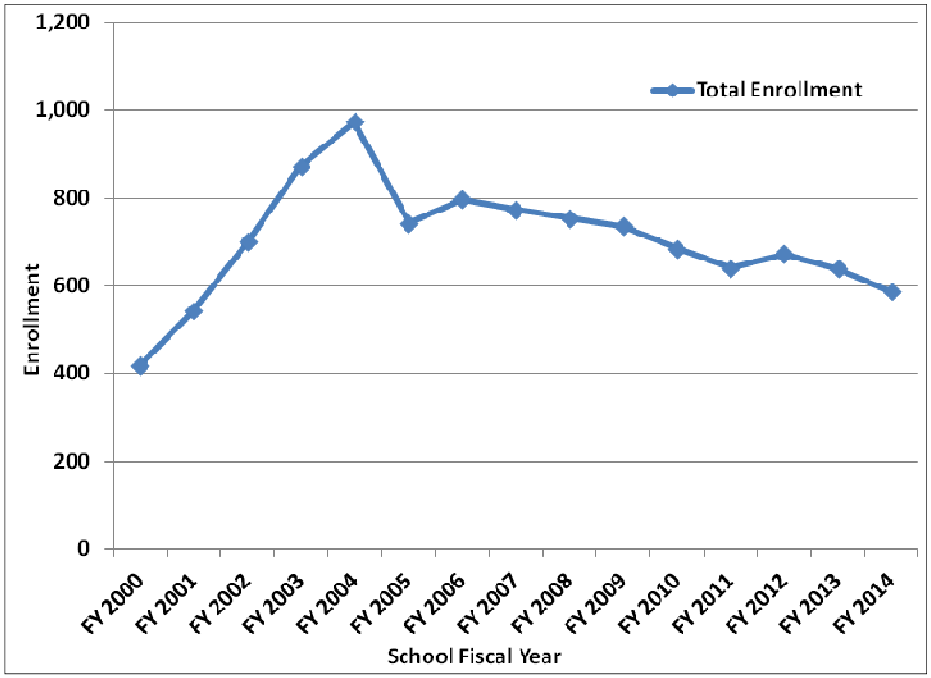

Figure B-4. Craig City School District Total Enrollment, 1999-2014

Source: State of Alaska Department of Education and Early Development

3. Employment and Income

Employment in Craig is dominated by the local government and trade, transportation, and utilities industries. These industries comprised just over 50 percent of the total employment in Craig in 2012.[8] Figure B-5 shows the composition of Craig employment by industry. According to data from the State of Alaska Department of Labor and Workforce Development

[7] State of Alaska Department of Education and Early Development, Statistics and Reports. http://education.alaska.gov/stats/

[8] State of Alaska Department of Labor and Workforce Development, Research and Analysis Section. Alaska Local and Regional Information, Craig, 2012. http://live.laborstats.alaska.gov/alari/details.cfm?yr=2012&dst=01&dst=03&dst=04&dst=06&dst=12&dst=09&dst=11&dst=07&r=5&b=21&p=69

(ADOL&WD), the top occupations in Craig in 2012 were cashier with 26 employees, followed by personal care and service worker with 19 employees, and combined food preparation and serving workers with 14 employees.

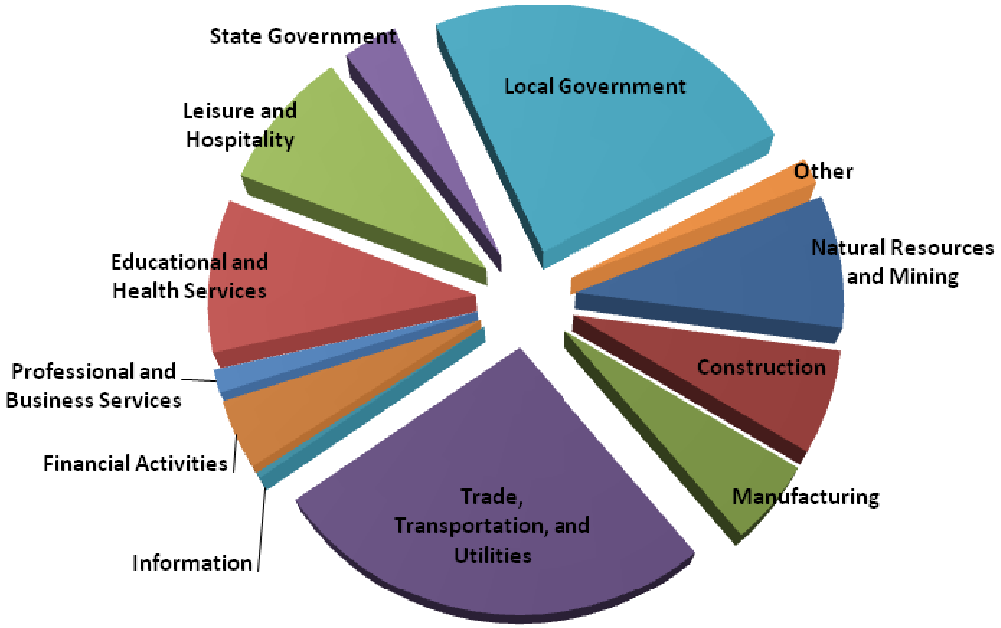

Figure B-5. 2012 Craig Employment by Industry

Source: State of Alaska Department of Labor and Workforce Development, Research and Analysis Section, Alaska Local and Regional Information

Data from ADOL&WD shows that in 2012, 73 percent of workers in Craig were employed in the private sector, followed by 24 percent in local government, and 3 percent in state government.[9] Table B-1 summarizes the ADOL&WD employment data for Craig.

[9] Ibid.

Table B-1. Craig Worker Characteristics, 2012

Craig Worker Characteristics, 2012	Value	Percent
Residents age 16 and over	**868**	
Residents employed	**554**	
Female workers	267	48%
Male workers	286	52%
Workers age 45 and over	246	44%
Workers age 50 and over	182	33%
Total Wages	**$16,198,351**	
Sector Employed in:		
Private	402	73%
Local Government	133	24%
State Government	19	3%
Peak quarterly employment	**476**	
Workers employed all four quarters	**339**	

Source: State of Alaska Department of Labor and Workforce Development, Research and Analysis Section, Alaska Local and Regional Information

The 2008 through 2012 5-year data from the American Community Survey (ACS)[10] reports that Craig had a total potential workforce (population over 16 years of age) of 960 (margin of error +/- 103) at that time. Of those, 713 (MOE +/- 85) were considered in the labor force, with 650 (MOE +/- 82) employed and 63 (MOE +/- 43) unemployed.[11]

The unemployment level does not account for all of the non-working adults in Craig. There were also 247 residents, 26 percent of the potential workforce, who were considered not in the labor force according to the ACS.[12] This means that they were not working and not looking for work. Many factors can play into the decision to search for jobs, including: scarce availability, informal searching (through communal connections), and seasonal shifts in job opportunities and subsistence activities. Were these individuals included, the unemployment rate for the community would be 32 percent rather than the 9 percent reported by the ACS. It is important to recognize the definitional differences of the potential workforce and the actual labor force for an accurate understanding of local economic conditions.

[10] The 2010 Census differed from past Censuses in that it collected only data related to general population statistics and did not collect income or employment information which had previously been ascertained using the Census "long form". Instead, the Census Bureau now uses the American Community Survey (ACS) to collect more detailed social and economic information from a sample of the American population. The ACS provides detailed and useful data, but it is based on a sample of the population, rather than the decennial census which attempts to count every person. As the ACS is based on a small sample size in an already small population of some communities in Alaska, it can be subject to high sampling variability and large margins of error. This analysis uses the 2008-2012 American Community Survey 5-Year Estimates to report current labor market and other economic conditions in Craig, but notes significant margins of error as appropriate.

[11] US Census Bureau, American Community Survey, 2008-2012 5-Year Data. Accessed through State of Alaska Department of Labor and Workforce Development, Research and Analysis Section. http://live.laborstats.alaska.gov/cen/acsdetails.cfm

[12] Ibid

The ACS reports that Craig has a total of 517 households (MOE +/- 60) with a median income of $58,015 per year (MOE +/- 9,184). In Craig, 214 persons (MOE +/- 93) live below the poverty level. In addition to regular income, the community had 92 of its residents (MOE +/- 29) collecting Social Security Income, 35 (MOE +/- 22) with public assistance income, and 69 (MOE +/- 22) collecting retirement income.[13]

In addition to wage earning jobs, many Craig residents practice a subsistence lifestyle.

Commercial fishing also plays an important role in the local economy. According to the State of Alaska Department of Fish and Game (ADF&G), 151 Craig residents held commercial fishing permits in 2010 and 107 residents held crew member licenses.[14] For 2012, the most recent year for which complete harvest data is available, the Commercial Fisheries Entry Commission (CFEC, a division of ADF&G) reports that 149 permit holders had a total of 274 permits issued, 191 of which were actually fished. Of the 191 permits fished, a total of 6.1 million pounds of fish were landed for estimated gross earnings of $8.9 million, or about $46,450 per permit fished. The majority of the harvest, 5.8 million pounds or 65 percent, was salmon, with the remaining harvest comprised of crab, halibut, herring, groundfish, shellfish, and sablefish.[15] Detailed information about commercial fisheries is presented in the Marine Resource Assessment Section.

F. Infrastructure

Craig is located on Prince of Wales Island. There is a road system on the island connecting the local communities, but Prince of Wales Island must be accessed by plane or ferry. Freight arrives by cargo plane, barge, and ferry in Hollis. A paved road exists between Hollis, Craig, Klawock, and the airport.

Craig is connected by a paved road to the Inter-Island ferry system in Hollis, which then serves Ketchikan and other cities in Southeast Alaska.

1. Marine Facilities

There are two small boat harbors in Craig: North Cove and South Cove. There is also a small transient float and dock in the downtown area. The J.T. Brown Marine Industrial Center was completed in 2006 and includes a dock and boat launch. Figure B-6 shows the existing facilities in Craig.

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[13] Ibid

[14] State of Alaska Department of Fish and Game, Commercial Fisheries Entry Commission. Permit Holder & Crew Member Counts by City of Residence for 2010. http://www.cfec.state.ak.us/cpbycen/2010/Mnu.htm

[15] State of Alaska Department of Fish and Game, Commercial Fisheries Entry Commission. Permit & Fishing Activity by Year, and City, Craig 2012. http://www.cfec.state.ak.us/gpbycen/2012/201429.htm

Figure B-6. Existing Craig Marine Infrastructure

Source: ©Google Earth. Citations added by USACE.

The South Cove harbor is a Federal, Corps of Engineers project. The harbor was authorized by the Rivers and Harbors Act, 2 March 1945 (House Doc. 558, 76th Congress, 3rd Session) as adopted, and provides for a 225-foot by 700-foot mooring basin and an entrance channel 100-feet wide by 500-feet long to a depth of 11 feet below Mean Lower Low Water (MLLW). The mooring basin provides 120 slips. Dredging at South Cove was first conducted in 1957, then in 1973, and again in 1992. Two overlapping breakwaters protect the mooring basin. Construction of the breakwaters was completed in January 1982.

Figure B-7. South Cove Harbor

North Cove harbor provides approximately 102 slips. A floating breakwater protects the majority of vessels moored at this harbor.

Figure B-8. North Cove Harbor

The City Dock also provides about 12 slips.

The Wards Cove Packing property consists of approximately five acres of upland and five acres of tide/submerged land located on Klawock Inlet adjacent to the Craig commercial and retail district. The property was used as a fish cannery starting in the early 1920s. Primary infrastructure at one time included the bulk fuels facility, a fish processing plant, and a boat maintenance and storage facility that included wood boat ways and a "steam donkey" winch house. The City of Craig now owns this property which includes a dock and fuel dock.[16]

The dock is a 200-foot by 25-foot wood pile supported pier and a 145-foot long by 6,000 square foot wide wood pile supported dock. The dock is surrounded by old wood pilings.[17]

The old fuel dock is a wood pile supported pier and dock with a building on the dock and an attached ramp and float. The building has been primarily vacant in recent years and the float and ramp have been subleased to various charter operators.[18]

There is also an old marine way and haulout which is a wooden-beam structured traditionally used to haul vessels out of the water for maintenance repair, and storage. The structure is no longer used.[19]

2. Ferry

The Inter-Island Ferry Authority operates daily between Hollis and Ketchikan. Hollis is 30 miles from Craig. This ferry enables transportation of passengers, cargo, and vehicles to Prince of Wales Island. The Inter-Island Ferry estimates that an average of 52,000 passengers per year used the ferry for travel between Hollis and Ketchikan from 2002 through 2013. The ferry transported an estimated 3 million pounds of seafood from Prince of Wales Island in 2013 with an ex-vessel value of $15 million.[20]

3. Airport

Scheduled air transportation to Ketchikan is available from the nearby Klawock Airport. A state-owned seaplane base at Klawock Inlet and a U.S. Coast Guard heliport are maintained in Craig.

The Craig Coast Guard heliport is a 70-foot by 70-foot wood pad. There are two sea plane bases in Craig – the Craig Sea Plane base owned by the City of Craig and the privately-owned El Capitan Lodge Sea Plane base.

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[16] Ward Cove Cannery Site Development Plan, Craig Planning Department. July 2006.

[17] Ibid

[18] Ibid

[19] Ibid

[20] The Inter-Island Ferry Authority By the Numbers. http://www.interislandferry.com/

4. Utilities and Services

The municipal facilities and services available in Craig include: piped water and sewer, refuse collection, landfill, police, fire and EMS, health clinic, library, schools, local transportation, swimming pool, parks and recreation, planning, daycare assistance, and jail.

The City of Craig operates the public water system including distribution, wastewater collection, and wastewater treatment. A landfill is operated by the City of Klawock.

Electricity is provided by the Alaska Power and Telephone Company through a combination of hydropower and diesel.

G. Government

The City of Craig was incorporated in 1922 as a second-class city under the law of the Territory of Alaska. It became a first class city in 1973. The City functions under a mayor/council form of government with the day-to-day operations overseen by a city administrator. There are six council members and a mayor, all of whom are elected.[21]

By 1974, the City Council created the planning and zoning commission. The commission is charged with responsibility for preparing and implementing the comprehensive plan, preparing and implementing zoning and subdivision ordinances, and for other planning and platting duties as assigned by the council or by ordinance.[22]

Today, Craig is a first class city in the Prince of Wales-Hyder Census Area. There are three different classifications of city governments in Alaska – home-rule, first-class, and second-class cities. A community must have a least 400 permanent residents to form a home-rule or first-class city. First- and second-class cities are general law cities: State law defines their powers, duties, and functions. All local governments in Alaska have certain fundamental duties such as conducting elections and holding regular meetings of the governing bodies.[23]

The City of Craig levies a 6.00 mill property tax. Craig's total 2013 property tax revenue was $516,969, or $417 per capita (based on a 2013 population of 1,243). Craig also levies a 5 percent sales tax with total 2013 revenue of $1,704,780 and a 6 percent alcohol tax with 2013 revenues of $115,149. The total 2013 per capita tax revenue in Craig was $1,880.[24]

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[21] City of Craig, Comprehensive Plan. Prepared by HDR Alaska, Inc., 2000.

[22] Ibid

[23] Local Government in Alaska. Prepared by Local Boundary Commission Staff, Alaska Department of Community and Economic Development. March 2004.

[24] State of Alaska, Department of Commerce, Community, and Economic Development. Alaska Taxable 2013. January 2014. http://commerce.alaska.gov/dnn/dcra/OfficeoftheStateAssessor/AlaskaTaxableDatabase.aspx

II. MARINE RESOURCE ASSESSMENT

This section describes the fisheries resources in the Craig area, the historical catch and values, fisheries management institutions and practices, and expectations for the future.

A. Overview

Craig small boat harbor facilities primarily support fishing vessels: commercial, subsistence, charter, and recreational. Therefore, the future demand for harbor facilities is dependent upon the viability of fishery resources in the region. The purpose of this section is to describe these resources, including historical catch information. Historical information serves as the basis for examining how the Craig fleet has utilized fisheries and responded to changes in availability and regulation. This section focuses on the current and future outlooks for the fisheries of importance to the Craig fleet.

B. Fisheries Management Institutions

Commercial fisheries of Alaska fall under a mix of state and federal management jurisdiction. In general, the state has management authority for all salmon, herring, and shellfish fisheries, whereas the federal government has management authority for the majority of groundfish fisheries, excepting those within 3 nautical miles of shore and a few others. The Pacific halibut fishery is managed by the International Pacific Halibut Commission.[25]

The State of Alaska took management control of its fishery resources from the federal government soon after statehood in 1959. Enactment of the Magnuson Fishery Conservation and Management Act (MFCMA) of 1976 asserted federal authority over the Exclusive Economic Zone (EEZ) from 3 to 200 miles offshore of the US coasts, with the waters inshore of 3 miles under state jurisdiction. The State of Alaska Department of Fish and Game (ADF&G) is the primary state fisheries management agency and the National Marine Fisheries Service (NMFS) is the primary federal fisheries management agency.[26] The specific fisheries management institutions are:

- Alaska Board of Fisheries (BOF)
- Alaska Department of Fish and Game (ADF&G)
- Commercial Fisheries Entry Commission (CFEC)
- National Marine Fisheries Service (NMFS)
- North Pacific Fishery Management Council (NPFMC)
- Pacific States Marine Fisheries Commission (PSMFC)
- International Pacific Halibut Commission (IPHC)

[25] State of Alaska Department of Fish and Game, Special Publication No. 0509. “Commercial Fisheries of Alaska”, June 2005.

[26] ibid

1. Board of Fisheries

The BOF[27] is responsible for considering and adopting regulations to allocate resources between user groups; establish fish reserves and conservation areas, fishing seasons, quotas, and bag limits size restrictions, means and methods, habitat protection, stock enhancement; and to develop commercial, subsistence, sport and personal use fisheries.

The BOF consists of seven members serving three-year terms. Members are appointed by the governor and confirmed by the legislature. Members are appointed on the basis of interest in public affairs, good judgment, knowledge, and ability in the field of action of the board, with a view to providing diversity of interest and points of view in the membership.

The Board of Fisheries' main role is to conserve and develop the fishery resources of the state. This involves setting seasons, bag limits, methods and means for the state's subsistence, commercial, sport, guided sport, and personal use fisheries, and it also involves setting policy and direction for the management of the state's fishery resources. The board is charged with making allocative decisions, and the department is responsible for management based on those decisions.

2. Alaska Department of Fish and Game

The ADF&G[28] is a research and regulatory agency. The division of Commercial Fisheries within ADF&G is charged with research and management of the commercial fisheries in Alaskan waters, which covers waters within 3 nautical miles of shore. Division biologists conduct research on migratory patterns, gear types, and the relative abundance of fish stocks. The department also has the authority to open and close commercial fishing periods based on preseason catch goals and biological considerations.

3. Commercial Fisheries Entry Commission

The CFEC[29] helps to conserve and maintain the economic health of Alaska's commercial fisheries by limiting the number of participating fishers. The Commission issues permits and vessel licenses to qualified individuals in both limited and unlimited fisheries, and provides due process hearings and appeals. The CFEC is a regulatory and quasi-judicial agency of the state. The commission consists of three members appointed by the governor and confirmed by the legislature. The governor designates one member of the commission as chairman. Members of the commission serve four year terms.

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[27] http://www.adfg.alaska.gov/index.cfm?adfg=fisheriesboard.main

[28] http://www.adfg.alaska.gov/index.cfm?adfg=home.main

[29] http://www.cfec.state.ak.us/

4. National Marine Fisheries Service

The NMFS[30] administers the National Oceanic and Atmospheric Administration's (NOAA) programs that support the domestic and international management and harvest of marine resources. The Alaska Regional office, located in Juneau, coordinates Federal and State resource management and research, and monitors and coordinates openings and closures of the fisheries within the Exclusive Economic Zone (EEZ). It is responsible for planning and implementing fishery management conservation programs, including fishery management plans established by the North Pacific Fishery Management Council.

Using the tools provided by the Magnuson-Stevens Act, NOAA's National Marine Fisheries Service assesses and predicts the status of fish stocks, ensures compliance with fisheries regulations, and works to reduce wasteful fishing practices. The Alaska Region of NOAA fisheries oversees sustainable fisheries that produce about half the fish caught in US waters, with responsibilities covering 842,000 square nautical miles. The Alaska Regional also works to ensure the viability of protected species – principally marine mammals – and to protect and enhance Alaska's marine habitat. NOAA's National Marine Fisheries Service works to promote sustainable fisheries and to prevent lost economic potential associated with overfishing, declining species and degraded habitats.

5. North Pacific Fishery Management Council

The NPFMC[31] is one of eight regional councils established by the Magnuson-Stevens Fishery Conservation and Management Act in 1976 to manage fisheries in the 200-mile EEZ. NPFMC is a body of 11 voting members who are appointed to the Council by the region's governors and the Secretary of Commerce. The NPFMC meets five times a year to allocate resources, set management policy, hear testimony from the industry, and consider issues important to the industry that fall under the Council's authority. The Council primarily manages groundfish in the Gulf of Alaska, Bering Sea, and Aleutian Islands, targeting cod, Pollock, flatfish, mackerel, sablefish, and rockfish species. Two major functions of the Council are the development and maintenance of fishery management plans for those fisheries under its authority in need of conservation and management. The Council also has authority under the 1982 North Pacific Halibut Act to develop regulations, including limiting access, for participants in the Alaska halibut fisheries. Resource allocations are divided by specie, by region, and according to the priorities of the Magnuson Act. The NPFMC has management authority from the 3-mile State boundary to the 200-mile EEZ boundary. Fisheries regulations developed by the Council are required to meet numerous regulatory standards and must be approved by the Secretary of Commerce.

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[30] https://alaskafisheries.noaa.gov/

[31] http://www.npfmc.org/

6. Pacific States Marine Fisheries Commission

The PSMFC[32] is one of three interstate commission dedicated to resolving fishery issues. The commission is comprised of 15 members appointed by State legislatures, State governors, and State fishery directors. Representing California, Oregon, Washington, Idaho, and Alaska, the PSMFC does not have regulatory or management authority: rather, it serves as a forum for discussion and works for coast wide consensus to State and Federal authorities. PSMFC addresses issues that fall outside state or regional management council jurisdiction. The goal is to promote and support policies and actions directed at the conservation, development, and management of fishery resources of mutual concern to member States through a coordinated regional approach to research, monitoring, and utilization.

7. International Pacific Halibut Commission

The IPHC[33] was established in 1923 by a convention between Canada and the Unites States for the preservation of the halibut fishery of the North Pacific Ocean and the Bering Sea. The convention was the first international agreement providing for the joint management of a marine resource. The Commission's authority was expanded by several subsequent conventions, the most recent being signed in 1953 and amended by the protocol of 1979. The IPHC is considered a public international organization. The IPHC conducts numerous projects annually to support both major mandates: stock assessment and basic halibut biology. The 6-member Commission meets annually to review all regulatory proposals, including those made by the scientific staff and the Conference Board, which represents vessel owners and fishers. The commission sets area quotas and seasons for the purpose of stock conservation. The measures recommended by the Commission are submitted to the two governments for approval. Upon approval, the regulations are considered Federal regulations and are enforced by the appropriate agencies of both governments.

8. Other Fishery Management Agencies

Also instrumental in data compilation, research and marketing are the Alaska Seafood Marketing Institute, the Alaska Fisheries Development Foundation, the Officer of International Trade, and the University of Alaska.

C. Fishery Management Techniques

Fisheries management techniques can take a variety of forms from size and type of gear, to hours, days, or time of year to harvest, and other types of permit restrictions. Alaska fisheries are managed for sustainability and while other parts of the world have suffered huge stock declines as a result of fishery management techniques, Alaska has not experienced that same

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[32] http://www.psmfc.org/

[33] http://www.iphc.int/

fate. In most cases, subsistence fishing takes priority over commercial, charter, and recreational fishing.

Subsistence uses of wild resources are defined as 'noncommercial, customary and traditional uses' for a variety of purposes. These include:

> *Direct personal or family consumption as food, shelter, fuel, clothing, tools, or transportation, for the making and selling of handicraft articles out of nonedible by-products of fish and wildlife resources taken for personal or family consumption, and for the customary trade, barter, or sharing for personal or family consumption (AS 16.05.940[32]).*

Under Alaska's subsistence statute, the Alaska Board of Fisheries must identify fish stocks that support subsistence fisheries and, if there is a harvestable surplus of these stocks, adopt regulations that provide reasonable opportunities for these subsistence uses to take place. Whenever it is necessary to restrict harvests, subsistence fisheries have a preference over other uses of the stock (AS 16.05.258).[34]

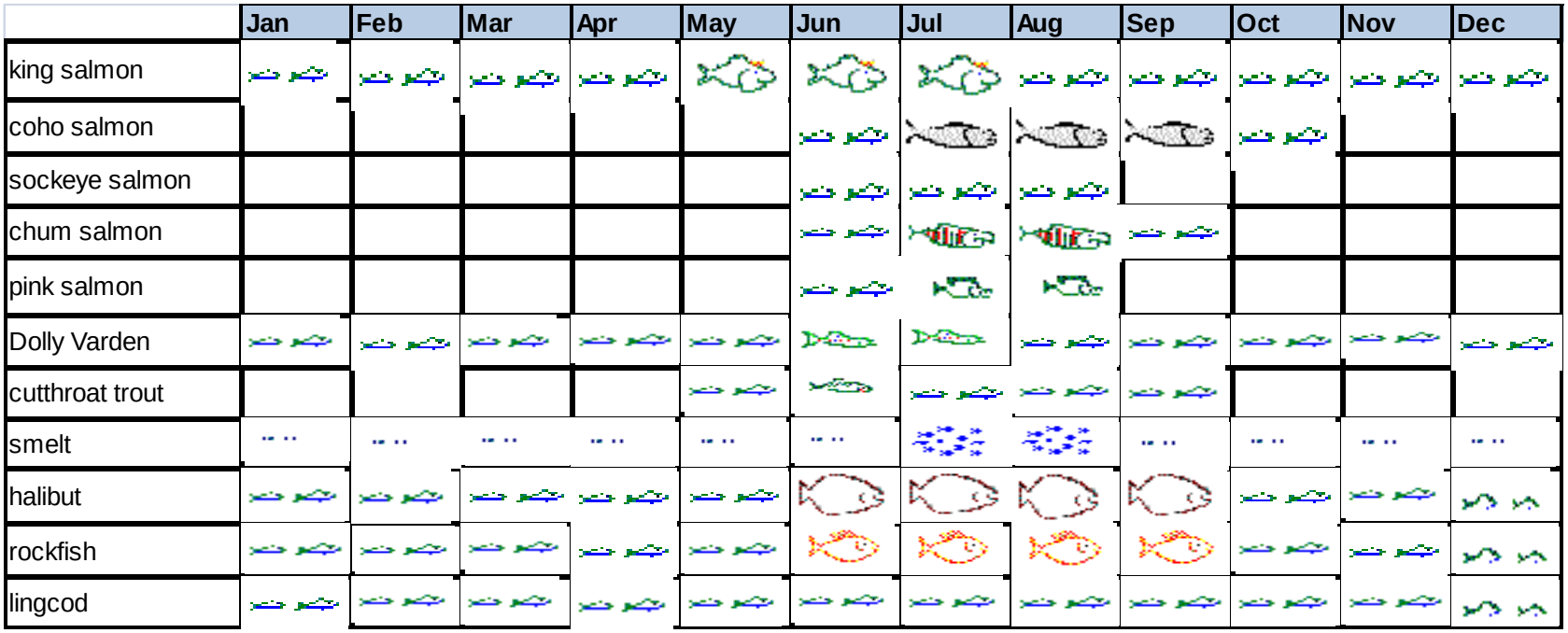
Special consideration is given to subsistence fishing in the Corps' Planning Guidance Notebook (Engineer Regulation 1105-2-100, Appendix E, Civil Works Missions and Evaluation Procedures, Section E-14 d, Subsistence Fishing); which states:

> *This is fishing, primarily for personal or family consumption, by those whose incomes are at or below the minimum subsistence level set by the Department of Commerce. For cost allocation purposes subsistence fishing is considered commercial fishing.*

[34] http://www.adfg.alaska.gov/index.cfm?adfg=fishingSubsistence.main

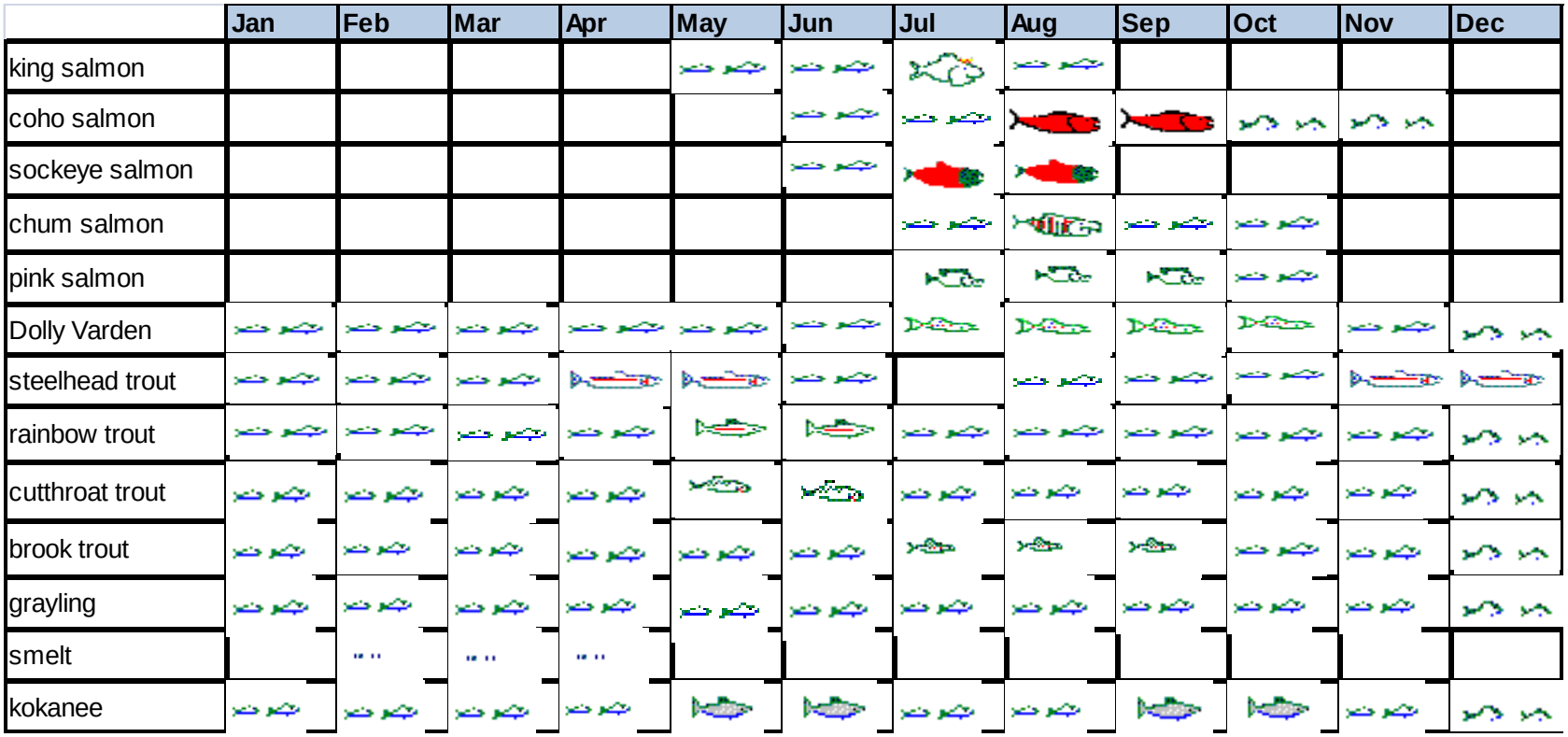
D. Harvest Timelines and Periods of Operation for Fisheries

Timing and location are critical when fishing in Alaska waters. The Alaska Department of Fish and Game publish runtime tables for sport fishers in order to maximize fishing success. The following graphics show saltwater and freshwater fish availability for Southeast waters that include Petersburg, Wrangell, Prince of Wales Island, and Ketchikan. The table indicates when fish are present (little fish) or at their peak availability (larger fish) in the saltwater area south of Fredrick Sound.



Source: Alaska Dept of Fish and Game http://www.adfg.alaska.gov/index.cfm?adfg=fishingSportFishingInforuntiming.main&chart=runktks

Figure B-9. Saltwater Fish Runtime Tables



Source: Alaska Dept of Fish and Game http://www.adfg.alaska.gov/index.cfm?adfg=fishingSportFishingInforuntiming.main&chart=runktk

Figure B-10. Freshwater Fish Runtime Tables

E. Commercial Fisheries

1. Types of vessels

According to CFEC data, there were 245 commercial fishing permits for Prince of Wales residents in 2013 (the most recent year for which complete data is available). Craig residents totaled 121 fishing permits for that same year or about half of all the fishing permits from Prince of Wales islanders.

Data from 2012 shows that almost 30 percent of Craig vessel owners had aluminum and 40 percent had fiberglass hulls. The vessels averaged 33 feet in length and were about 35 years old. In Alaska, it is common for commercial fishing vessels to be used for more than one type of fishing activity and to use multiple gear types. In Craig, most vessels had two gear types each. Table B-2 provides additional details on vessels owned by Craig residents.

Table B-2. Vessel Characteristics for Craig Boat Owners

Vessel Characteristics	Average (Mean)	Median
Year Built	1977	1978
Age (in the year 2012)	35 yrs.	
Number of Gear Types per Vessel	2	2
Horsepower	172.4 hp	150
Fuel Tank Capacity	590.3 gal.	300
Hold Tank Capacity	798.1 cu. ft.	480
Live Tank Capacity	454.3 cu. ft.	173.5
Length	33.0 '	35
Aluminum	21.9 '	19
Concrete	45.3 '	45
Fiberglass/Plastic	34.6 '	36.5
Iron/Steel/Alloy	50.3 '	50
Rubber	11.0 '	11
Wood	41.1 '	40

Source: Alaska Department of Fish and Game, Commercial Fisheries Entry Commission.

Most vessels in Craig are commercial fishing vessels with a few vessels operating as tenders/packers (7 vessels) or freezer/canners (2 vessels). Almost 64 percent of the vessels have diesel engines with the balance operating on gas engines. Power troll vessels represent about 42 percent of the fleet followed by longline vessels at 37 percent. See Table B-3.

Table B-3. Additional Vessel Characteristics for Craig Boat Owners

Additional Vessel Characteristics	# of Vessels	% of Total Vessels
Total Number of Vessels Surveyed	148	100%
Engines		
Diesel	94	63.5
Gas	54	36.5
Refrigeration	24	16.2
Registered for a Salmon Net Area	20	13.5
Company or Partnership Owned Vessels	4	2.7
Hull Type		
Aluminum	44	29.7
Concrete	3	2
Fiberglass/Plastic	60	40.5
Iron/Steel/Alloy	6	4.1
Rubber	1	0
Wood	34	23
Type of Activity (See note to table)		
Freezer/Canner	2	1.4
Tender/Packer	7	4.7
Commercial Fishing	147	99.3
Gear(s) Intended to be Used (*See note to table*)		
Diving Gear	34	23
Gill Net - Drift	11	7.4
Gill Net - Herring	4	2.7
Longline	55	37.2
Mechanical Jig	8	5.4
Pot Gear	31	20.9
Ring Net	1	0.7
Seine - Purse Seine	15	10.1
Seine - Beach Seine	1	0.7
Trawl - Beam	2	1.4
Troll - Dinglebar	8	5.4
Troll - Hand	34	23
Troll - Power	62	41.9
Other Gear Types	25	16.9

Source: Alaska Department of Fish and Game, Commercial Fisheries Entry Commission.

Note to table: Vessels can be used for more than one activity and can use multiple gear types. As a result, in these categories a vessel may be counted multiple times. Some vessels may not be counted at all if the activity or gear information was not provided on the vessel license application.

2. Landed Weights and Ex-Vessel Values

According to the CFEC, the total commercial harvest by Prince of Wales Island residents in 2013 was more than 27 million pounds. Since Craig has the only land based seafood processor on the island, most of these fish would be delivered to that processor. The five species of salmon comprise the majority of the harvest with 90 percent of the pounds landed and 75 percent of the total value. Earnings per fisherman have steadily increased in the last 14 years reaching a high of $81,855 in 2013. Earnings per fisherman are based on the total earnings divided by the number of fishermen who fished. Due to confidentiality restrictions and limited participation, gross earnings will be understated for some fisheries.
See Table B-4.

Table B-4. Prince of Wales Island – All fisheries combined

Year	Number of fishermen who fished	Total pounds landed	Estimated gross earnings	Earnings per fishermen	Earnings in 2014 dollars
2000	246	8,646,745	$6,454,848	$26,239	$37,346
2001	246	13,579,049	$6,822,300	$27,733	$38,379
2002	237	9,700,222	$5,438,840	$22,949	$31,156
2003	254	10,591,222	$6,999,064	$27,555	$36,420
2004	251	13,098,655	$9,261,664	$36,899	$47,541
2005	243	13,105,924	$9,006,401	$37,063	$46,335
2006	242	8,889,527	$9,982,272	$41,249	$49,968
2007	240	14,547,800	$12,175,268	$50,730	$60,119
2008	254	11,452,073	$14,470,378	$56,970	$64,570
2009	255	15,023,471	$11,441,805	$44,870	$50,260
2010	246	15,843,299	$14,318,540	$58,205	$64,061
2011	227	19,392,630	$17,080,457	$75,244	$80,231
2012	231	16,676,578	$17,090,831	$73,986	$77,170
2013	245	27,079,337	$20,054,585	$81,855	$82,779

Note: 2009 and 2010 Salmon pounds landed and estimated gross earnings are understated due to confidentiality of data.

Figure B-11 shows the Prince of Wales Island historical fishing activity for all species from 2000 through 2013. Gross earnings are displayed in 2014 dollars.

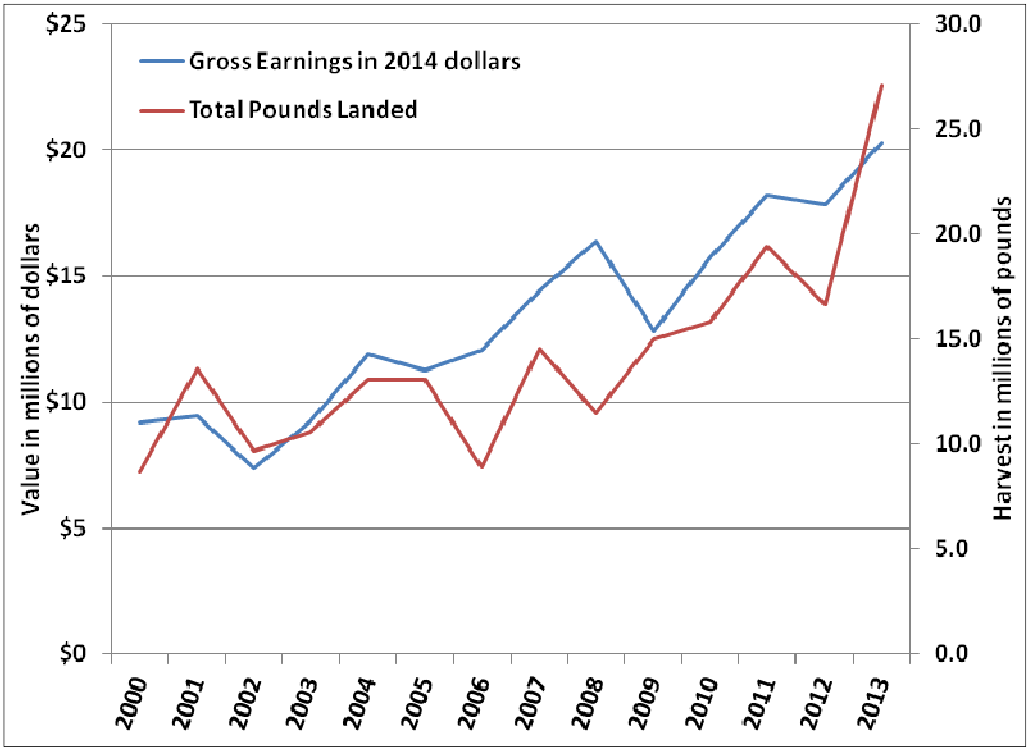


Figure B-11. Prince of Wales Island Historical Harvest

Fisherman with Craig, Alaska mailing addresses comprise about 42 percent of the total pounds landed from the Prince of Wales Islanders and about 52 percent of the total earnings in 2013. Pounds landed and earnings have steadily increased since 2000, reaching a high of 11.4 million pounds in 2013. Earnings per fisherman reached a high of $87,307 in 2013 which is slightly higher (about 5 percent) than the earnings by all Prince of Wales Islanders. See Table B-5.

Table B-5. Craig Residents – All fisheries combined

Year	Number of fishermen who fished	Total pounds landed	Estimated gross earnings	Earnings per fishermen	Earnings in 2014 dollars
2000	124	3,344,382	$3,396,094	$27,388	$38,981
2001	116	4,795,555	$3,374,881	$29,094	$40,262
2002	115	3,918,228	$2,951,369	$25,664	$34,842
2003	113	4,212,357	$3,627,786	$32,104	$42,432
2004	122	6,513,013	$5,373,341	$44,044	$56,746
2005	115	4,095,305	$4,958,380	$43,116	$53,902
2006	116	3,297,933	$5,711,628	$49,238	$59,646
2007	106	4,436,204	$6,110,615	$57,647	$68,316
2008	119	4,771,762	$7,824,845	$65,755	$74,527
2009	121	5,388,789	$5,773,321	$47,713	$53,445
2010	115	5,573,720	$7,409,382	$64,429	$70,912
2011	108	7,175,298	$8,930,243	$82,687	$88,168
2012	120	6,103,817	$8,871,945	$73,933	$77,114
2013	121	11,412,585	$10,443,123	$86,307	$87,280

Note: 2009 and 2010 Salmon pounds landed and estimated gross earnings are understated due to confidentiality of data.

Figure B-12 shows the total pounds landed and catch value for all fisheries combined for those fishers with Craig, Alaska mailing addresses from 2000 through 2013.

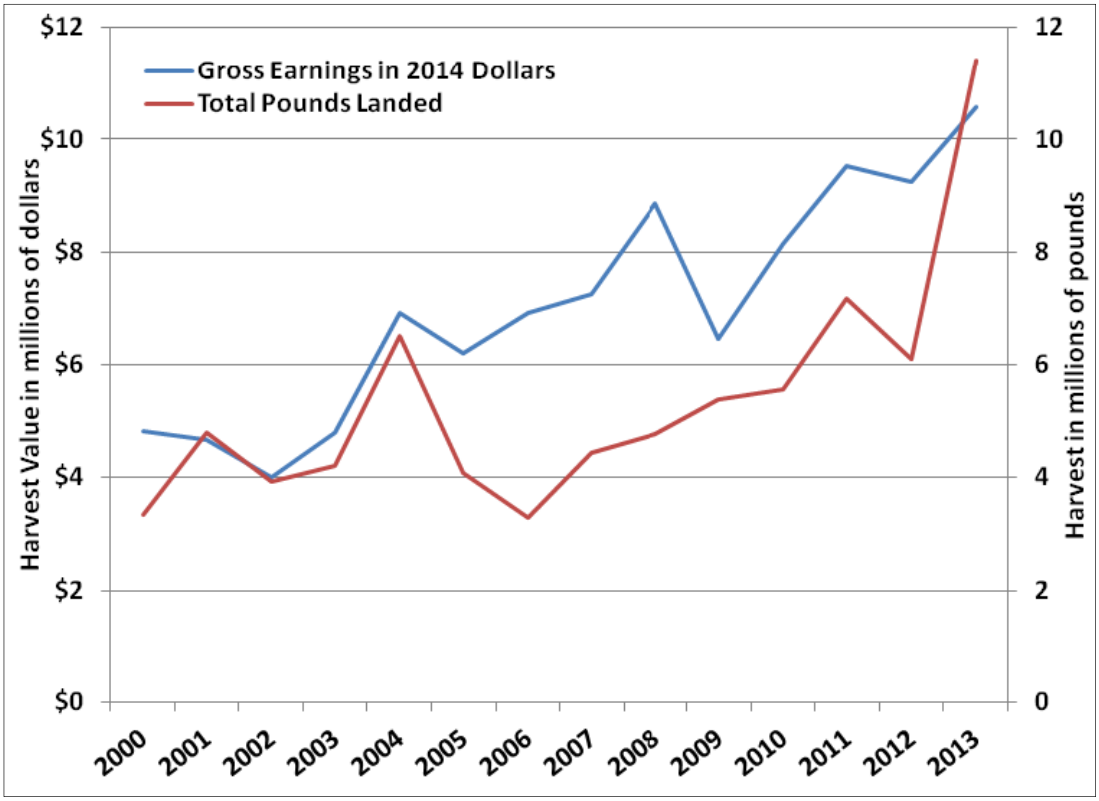


Figure B-12. Craig Residents Historical Harvest

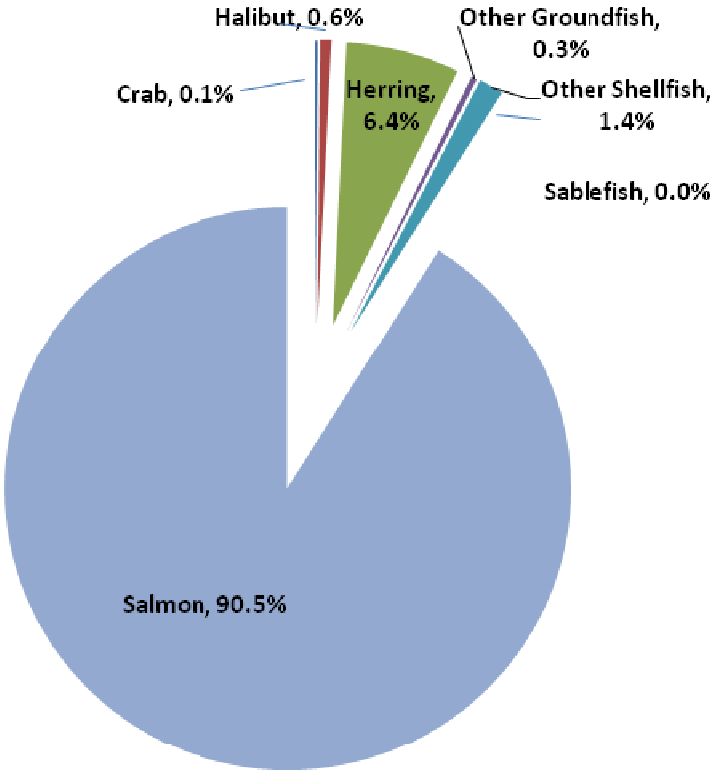


Figure B-13. Species Harvest Percentages (total pounds landed) 2013 for Prince of Wales Island Residents

Salmon species represented more than 90 percent of the total pounds landed for the Prince of Wales Island fishers during the calendar year 2013. This is typical of previous years' harvests. Herring came in a distant second with about 6 percent of the total harvest. All other fisheries were one percent or less of the total catch.

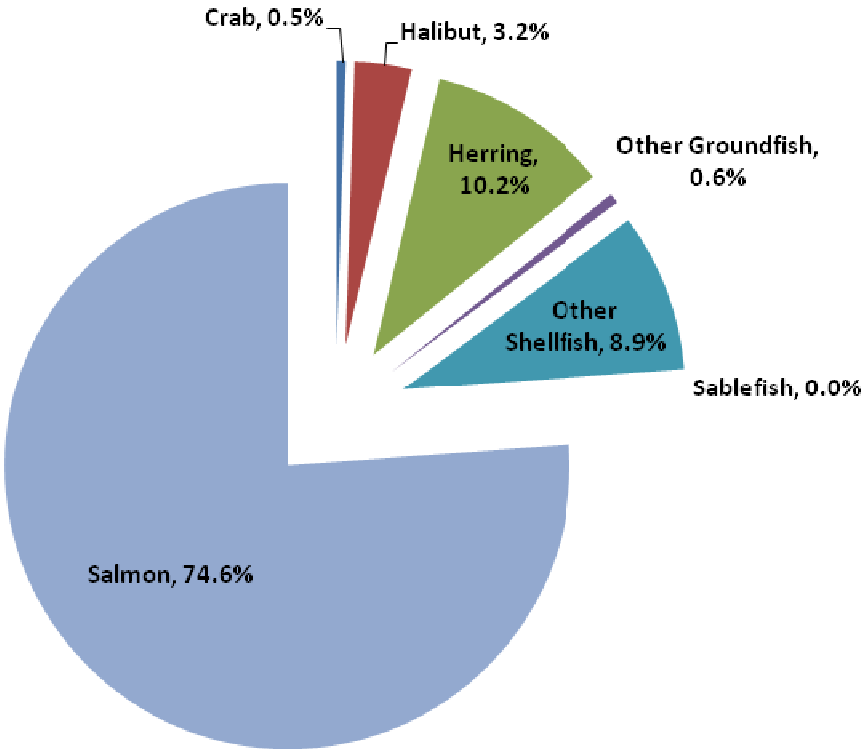


Figure B-14. Species Value Percentages (total value) 2013 for Prince of Wales Island Residents

In contrast, the total value of landed salmon for the Prince of Wales Islanders was about 75 percent of all species harvested. Herring was second at 10 percent of the total value, followed by other shellfish with almost 9 percent of the total value. Other fisheries, like sablefish and crab, are high value fisheries but because of limited participation, harvest and value are not disclosed.

There are 10 buyer/sellers registered with the State of Alaska Department of Fish and Game for 2014 for Prince of Wales Island companies. Two have Klawock addresses while the rest have Craig addresses. Half of them are registered as catcher/sellers, three are shore-based processors, and two are direct marketers.

3. Salmon

Five Pacific salmon species spawn and have directed fisheries in Alaska: sockeye or red salmon; pink salmon; chum or dog salmon; king or Chinook salmon; and coho or silver salmon. Chinook or king salmon is Alaska's state fish and is one of the most important sport and commercial fish native to the Pacific coast of North America. It is the largest of all Pacific salmon and garners the highest price per pound of all the salmon species. Pink salmon

comprise the greatest number of fish and total poundage of all the salmon species harvested in Southeast. Biological escapement goals for pink salmon were met or exceeded for the 2013 fishing season. The 2014 pink salmon harvest is expected to be average.[35]

Table B-6. Southeast Alaska Salmon Statistics (2013 Salmon Season)

Species	Avg. Wt. (pounds)	Avg. Price per Pound	Number of Fish (thousands)	Lbs. of Fish (thousands)	Est. Value US$ (thousands)
Southeast					
Chinook	13.0	$6.70	200	2,601	$17,423
Sockeye	6.0	$1.85	910	5,488	$10,140
Coho	5.7	$1.17	3,504	19,987	$23,410
Pink	3.5	$0.40	89,234	313,714	$124,742
Chum	8.2	$0.52	10,220	83,415	$43,638
Totals			**104,067**	**425,206**	**$219,354**
Estimates based on fish tickets, inseason estimates, and reports from Area Managers.					

Source: ADF&G, October 10, 2013

4. Herring

Commercially exploitable quantities of Pacific herring occur in Alaska from its southern boundary at Dixon Entrance (55° N) to Norton Sound (64° N). Herring spawn in nearshore areas and deposit their eggs on intertidal and subtidal vegetation. Spawning begins as early as late March in southern Southeast Alaska and continues through mid July in the northern Bering Sea. Southeast Alaska commercial herring fisheries occur during the winter when herring are harvested for use primarily as bait, and during the spring when herring are harvested for their roe. The roe harvest includes the traditional sac roe fisheries and, in recent years, spawn-on-kelp pound fisheries. Herring is harvested by purse seine and drift gillnet fishers. These vessels are represented in the Craig fleet by 10 and less than 3 percent. The future of the herring fishery in Southeast appears stable.

5. Other Shellfish

Southeast Alaska shellfish commercial fisheries include red and blue king crab, tanner crab, Golden king crab, Dungeness crab, pot shrimp, and beam trawl shrimp. These fisheries are managed for sustainable harvests and have experienced closures in recent years and limited harvest times in order to maintain the fish stock. Table B-7 shows the most recent published

[35] Special Publication 14-10 – Run Forecasts and Harvest Projections for 2014 Alaska Salmon Fisheries and Review of the 2013 Season by the Alaska Department of Fish and Game, Divisions of Sport Fish and Commercial Fisheries published April 2014.

data for commercial harvests of shellfish in Southeast waters. About 20 percent of the Craig vessel owners participate in shellfish fisheries using pot gear.

Table B-7. Southeast Alaska Registration Area A Shellfish Statistics

Area Season	Fishery	Harvest (lbs)	Approximate Ex-vessel Value
2005/2006	Red and blue king crab	209,799	$ 1,099,000
2010/2011	Tanner crab	891,344	2,425,059
2010/2011	Golden king crab	687,505	4,656,267
2010/2011	Dungeness crab	3,245,265	5,525,404
2010/2011	Pot shrimp	556,574	1,519,447
2010/2011	Beam trawl shrimp	132,383	107,813
	Total	**5,722,870**	**$ 15,332,990**

Source: ADF&G December 2011

6. Other species

Groundfish such as halibut and sablefish are also harvested by Craig and Prince of Wales Island residents. However, the participation rate for these fisheries is low and the harvest and values is not disclosed.

7. Local Processing Facilities

Silver Bay Seafoods is an integrated processor of frozen, headed and gutted salmon for domestic and export markets. The company began in 2007 as a single salmon processing facility in Sitka, Alaska. Today, Silver Bay is one of the largest seafood companies in Alaska, operating five domestic processing facilities throughout Alaska and the West Coast.

Silver Bay combines state of the art processing plant and favorable logistics to support its operations; competent management and key personnel; an established fish buying system; and ownership by fishermen who represent over 80 percent of the committed fishing effort.[36]

While salmon and herring production were the primary focus in the beginning, Silver Bay continues to explore areas to offer more value-added products to its customer base.

[36] http://www.silverbayseafoods.com/facilities.html

Figure B-15. Silver Bay Seafoods processing plant

Source: Silver Bay Seafoods website: http://www.silverbayseafoods.com/facilities.html

In 2007, the City of Craig solicited for a lease arrangement that would result in construction and operation of both the cold storage and seafood processing plant facilities. After a successful initial year of production in Sitka, Silver Bay Seafoods submitted its own proposal for a processing and freezing facility closely patterned after the Sitka plant.

The City of Craig Assembly chose Silver Bay's proposal, recognizing Silver Bay's competitive advantages of possessing a unique combination of ownership interests, plant efficiencies, and an ability to maximize processing capacity from owner fleet commitments. SBS Craig opened in 2009. During the 2013 Salmon Season, SBS Craig employed 246 workers for salmon processing and equipment maintenance. Since the plant opening in 2009, Craig residents have enjoyed a steady increase in seafood harvest. See Figure B-12.

Silver Bay Seafoods reports a processing capacity of approximately 1.1 million pounds per year under current operations. The company reports that they plan to expand their capacity to 1.5 million pounds by the 2015 season, which will process the catch of 8 to 12 additional commercial fishing vessels.

8. Outlook for Commercial Fisheries

The outlook for commercial fishing in the Craig and Prince of Wales Island area is considered good. Salmon stocks are healthy and in some cases increasing. Herring and shellfish fisheries experience low participation and are probably supplemental to the primary salmon fishing endeavors. Likewise, participation in groundfish and sablefish fisheries experience low participation. Commercial fishing is expected to continue to be a viable industry for Craig and the Prince of Wales Island residents and the Silver Bay Seafoods land-based processor in Craig will attract more commercial fishers to the region.

F. Sport Fisheries

Most sport fishing effort occurs from late May through early September. Chinook fishing usually peaks in June with both May and July being very good for the Prince of Wales Island area. Coho peaks in August with good catches in both July and September. Halibut fishing also peaks during the summer months. The majority of the Chinook and halibut effort occurs on the west coast of the island.

One of the most popular freshwater fisheries with anglers every year is the coho fishing found on Prince of Wales Island. Most anglers target the "fall run" coho that usually begin entering Prince of Wales Island streams in late August and peak in September. However a few island streams contain runs of "summer run" coho and these fish can be found in fresh water as early as late June (with July and August being the best time to fish for these returning salmon). The largest run of summer run coho on the island occurs at the outlet of Neck Lake near Whale Pass (this is a hatchery return) and this fishery remains good from late June through August. By far the largest coho return in the area is to the Klawock River. The Klawock River Hatchery releases millions of coho smolt annually, and the best time to fish for Klawock coho is from late August through September. There are many other fine coho streams to choose from on the island as almost all streams that contain anadromous salmon have a coho run.

The best months for steelhead fishing on the island are April and May, but a few fall run fish can be found throughout the winter in some of the larger streams. The majority of steelhead runs on the island are small and number less than 200 returning adults annually.

Table B-8. Prince of Wales Island Sport Fish Hours per Harvest

WEEK	Chinook	Chum	Coho	Halibut	Pinks	Rockfish
5/06-5/12	23	-	-	17	-	32
5/13-5/19	14	-	-	11	-	6
5/20-5/26	20	-	-	8	-	5
5/27-6/02	20	-	-	5	-	6
6/03-6/09	12	2000	294	6	-	2
6/10-6/16	6	1429	53	4	2500	2
6/17-6/23	5	167	6	3	59	1
6/24-6/30	5	370	5	2	152	1
7/01-7/07	7	313	3	2	145	1
7/08-7/14	9	500	2	2	79	1
7/15-7/21	15	99	1	2	42	1
7/22-7/28	12	370	1	2	22	1
7/29-8/04	15	233	1	2	19	1
8/05-8/11	22	286	1	2	23	1
8/12-8/18	41	625	1	2	17	1
8/19-8/25	69	1250	1	2	13	2
8/26-9/01	90	588	1	3	76	1

Source: State of Alaska Department of Fish and Game, Prince of Wales Island, Sport Fishing

G. Subsistence Fisheries

Subsistence uses of wild resources include direct personal or family consumption as food, shelter, fuel, clothing, tools, or transportation, for the making and selling of handicraft articles out of non-edible by-products of fish and wildlife resources taken for personal or family consumption, and for the customary trade, barter, or sharing for personal or family consumption.[37] Fish comprise the largest number of pounds for the subsistence harvest followed by land mammals and marine invertebrates. Most methods of subsistence harvest require a vessel to get to the harvest grounds.

Table B-9. Prince of Wales Island Subsistence Activity (1997)

Resource	Percent Using	Percent Attempting to Harvest	Reported Harvest	Units	Estimated Harvest	Avg Lbs Harvested per Household	Per Capita Lbs Harvested
All Resources	98.8	91.3	115,789	Lbs.	406,934	669.3	230.66
Fish	96	79.8	63,819	Lbs.	224,289	368.9	127.13
Land Mammals	80.9	59.5	854	Ind.	3,001	135.1	46.56
Marine Mammals	8.7	6.4	90	Ind.	316	29.32	10.1
Birds and Eggs	15.6	12.7	552	Ind.	1,940	2.64	0.91
Bird Eggs	4	2.3	150	Ind.	527	0.26	0.09
Marine Invertebrates	80.3	49.1	14,354	Lbs.	50,446	82.97	28.59
Vegetation	74	67.6	9,372	Lbs.	32,938	54.17	18.67

Source: Alaska Department of Fish and Game, Community Subsistence Information System, Harvests by Community. The most recent harvest data for the Craig is 1997.

H. Charter Fisheries

The Alaska Department of Fish and Game issues licenses for guide and charter services in the state. Depending on the targeted fishery, the requirements could include vessel registration, guide/charter license, fishing tags, logbook submittal requirements, and other reporting functions. Charter and guide services follow roughly the same harvesting window as the commercial and subsistence fisheries with some restrictions on total catch.

Targeted species for charter and guide services are generally the five salmon species and halibut, though there are other fishing opportunities as well. The State of Alaska Department of Commerce lists four active businesses in Craig that primarily offer charter fishing excursions. These vessels are generally smaller class (in the 28-32 foot range) in order to

[37] State of Alaska Department of Fish and Game, Subsistence Fishing home page (also from Alaska Statute 16.05.940[32]). http://www.adfg.alaska.gov/index.cfm?adfg=fishingSubsistence.main

offer a more intimate setting and strong customer service. Charter/guide companies will often partner with the local inns and B&B's or provide accommodations as a side business.

I. Fisheries Outlook Summary

The fishing industry off Prince of Wales Island is strong and growing in popularity. The total harvest in 2013 was 218 percent of the recent 10-year average harvest of 51.6 million fish, and 287 percent of the long-term average harvest since 1962 of 39.2 million fish for the Southeast region.[38] The biological stock is healthy and the addition of the land-based processing plant at Craig offers opportunities for commercial and charter fishers to timely deliver and process catch for shipping while the harvest is fresh.

[38] Special Publication 14-10 – Run forecasts and Harvest Projections for 2014 Alaska Salmon fisheries and Review of the 2013 Season, published April 2014 by the Alaska Department of Fish and Game.

III. METHODOLOGY

This section describes the methods used to conduct the economic analysis of additional navigation improvements at Craig, Alaska. Primary data collection efforts included an Office of Management and Budget (OMB)-approved mail-out survey, personal interviews, and other follow-up research and data gathering.

Justification for a proposed action is determined by comparing average annual costs (including project first costs, interest during construction, and operations and maintenance expenses) with an estimate of the average annual benefits derived from the project. Application of an appropriate discount rate and period of analysis make benefits and costs comparable on an equivalent time value of money. For this analysis, the Federal Fiscal Year 2015 discount rate of 3.375 percent was used, and a 50-year project period of analysis.

The 50-year period of analysis begins in the first year which benefits begin accruing. In this case, that is the first year a project can be utilized, or 2017. This is also the year to which benefits are discounted back. All benefits are calculated in current year dollars.

The identification of project benefits under the National Economic Development (NED) criteria is based on increases in the net value of national output of goods and services, expressed in monetary units. It includes the value of goods and services that are and are not marketed. Benefit cost analysis is the technique used to identify the value of the effects. Included are categories of benefits that can be assigned tangible monetary values directly resulting from harbor development.

A. Evaluation Framework

USACE planning is conducted by comparing with- and without-project forecasts of future conditions in the study area. To ensure that plan alternatives are economically efficient, it is necessary to impose the condition of economically rational behavior on individuals and firms in both project conditions. The evaluation results in the identification of a theoretical willingness to pay for the project outputs which is used to express the NED benefits, regardless of who will actually pay. Several economic analysis methods are used for this study, and will be described in subsequent sections.

B. Data Collection Techniques

As this is a small boat harbor project located in a rural Alaskan community, there is limited empirical data with which to conduct economic analysis. To address the lack of data, the Alaska District conducted an OMB-approved mail-out survey to vessel owners and fishing permit holders in the region of Craig. The results of this survey are the primary inputs to the Craig benefits model. Supplemental data was collected through informal interviews and additional follow-up research.

1. Mail Survey

The purpose of the Craig Small Boat Harbor Survey was to gather primary data from Craig harbor users, identify and describe existing conditions, and determine potential benefits from navigation improvements. In accordance with Corps procedures, survey questions were developed using approved surveys found on the IWR website and recently-approved Alaska District surveys. A copy of the Craig Small Boat Harbor Survey and the results analysis report are attached to this document. The survey was approved by the Office of Management and Budget on February 5, 2013 and an OMB number and disclosure was included on each survey mailed.

a. Research Questions

The survey gathered information about use patterns and expenditures from boaters who used existing Craig small boat harbor facilities during 2012. The study was administered in the spring of 2013, so 2012 was the most recent complete boating and fishing season. The responses to the questions allowed the study team to identify the existing and project the expected future without-project conditions by documenting vessel characteristics, existing use of the harbor, and anticipated future use of the harbor.

b. Sampling Strategy

Surveys were mailed to vessel owners and permit holders with 2012 fishing permits in the Prince of Wales Island region. The population of potential Craig harbor users was obtained from three State of Alaska Department of Fish and Game (ADF&G) databases: permit holders with a Prince of Wales Island mailing address, permit holders with 2012 permits for waters around Prince of Wales Island, and 2012 vessel owners indicating that Prince of Wales Island communities were homeports. In addition, a database of current Craig harbor users and the Craig harbor waitlist provided by the City of Craig was matched to the permit and vessel database in order to include all current and potential users of an expanded harbor.

In total, 1,527 surveys were mailed to boaters and permit holders in the region. There were 338 survey responses, and 117 surveys returned as undeliverable for an overall response rate of 24 percent.

c. Collection Procedures

The Alaska District mailed the survey questionnaires with an enclosed cover letter under the signature of the City Administrator for Craig. The letter and survey clearly stated that the distribution was on behalf of research efforts by the US Army Corps of Engineers. Each survey mailed also included a redeemable coupon for a free cup of coffee or tea on behalf of the City of Craig. This was a suggestion by the City of Craig to increase survey response levels, and was offered and paid for by the City of Craig.

Each questionnaire included a pre-addressed return envelope to encourage returns. Additional survey questionnaires were also available from the City of Craig offices. Potential respondents were advised that completed surveys could be mailed directly to the Alaska District and could also be returned to the Craig City office or Craig harbormaster’s office.

d. Follow-up Procedures

Each questionnaire was assigned a unique identification number for follow-up purposes. As surveys were returned, responses were entered into the response database by survey number to identify who had responded. A tally of responses was taken to determine if response levels had reached the survey goal. Craig City and harbormaster staff encouraged local residents to respond to surveys, but no formal reminder was sent due to an acceptable level of survey responses from the first round of mailings.

e. Survey Data Analysis

Alaska District economics staff prepared a Microsoft Excel database for data entry. Surveys were returned via mail directly to the Alaska District and the data was entered. The database included quality control techniques to ensure accuracy of responses. After data entry was complete, the Alaska District economics team analyzed the responses.

2. Interviews

While survey response data serves as the primary input for the economic analysis, there is additional data needed. Informal interviews were conducted with project stakeholders throughout the study process. This includes significant data gathering at the planning charette held in Craig on November 6-8, 2012 and on follow-up site visits in February 2014 and September 2014. The City of Craig also provided valuable follow-up information such as the current harbor slip list and waiting list. Additional interviews included the local fish processing facility, the Craig harbormaster, recreational boaters, and charter operators.

3. Additional Research

Some other input data for the economic analysis was gathered through research. This includes fishery information and vessel operating practices. These items will be described in more detail as appropriate in the following sections.

IV. EXISTING CONDITIONS

This section describes the existing conditions at Craig small boat harbor facilities. This includes information about current facilities, usage, and vessel types. The data forms the basis for the overall demand for moorage at Craig, including current overcrowding or unmet moorage demand.

The specific issues described in this section are the foundation for analysis of the costs of these items in the future without project (FWOP) and future with project conditions (FWP). These issues are based on information gathered during the planning charette, with more specific data gathered through the Craig Small Boat Harbor Survey.

A. Current Harbor Facilities

Existing moorage facilities in Craig include the North Cove and South Cove harbors, as described in the Overview of Region and Community section of this report. There is a small amount of other moorage available in Craig at various docks. There is a boat launch ramp at North Cove. Table B-10 summarizes the amount of moorage at Craig.

Table B-10. Existing Craig moorage capacity

Facility	Number of slips	Feet of transient moorage
North Cove Harbor	102	700
South Cove Harbor	120	125
City Dock		350
False Is. Dock		223
Total	**222**	**1,398**

Source: City of Craig, Comprehensive Plan, 2000.

Current facilities are overcrowded and the harbormaster maintains a waitlist. The City of Craig's Comprehensive Plan from 2000 stated that Craig is the busiest port on Prince of Wales Island. This is likely still true as Craig has the largest population of all communities on Prince of Wales Island, and has the largest harbor facilities.

Many of the wait-listed vessels are accommodated by rafting at the various docks along the north side of Craig Island. Rafting also occurs to a lesser extent at the South Cove Harbor.

Based on local observations, storm-induced waves impact the South Cove breakwater during the worst storms. Vessel and dock damages occur from impacts and rubbing of rafted vessels during storm events. Rafting of vessels up to five deep occurs at North Cove due to overcrowding and unprotected docks along the north side of Craig Island. Vessel and dock damages similar to that at the South Cove are experienced along the north side docks. Overcrowding also causes delays in departing during critical times to reach the fishing grounds during the limited open fishing seasons.

B. Harbor Use

The existing Craig small boat harbor facilities for the purposes of this analysis are considered the North and South Cove harbors. These facilities typically operate at capacity during the fishing season. The City of Craig provided data regarding the current vessel use of these harbors.

1. North Cove

Records from the City of Craig regarding the use and availability of slips at the North Cove Harbor are shown in Table B-11.

Table B-11. North Cove Harbor slips and usage

North Cove	0-20’	21-27’	28-36’	37-45’	46-60’	>60’	Unknown	Total
Number of slips	0	6	6	49	35	0	3	99
Permanent boats	3	3	12	29	24	0	2	73
Transient boats	0	2	5	7	9	1	0	24
Open slips	0	0	0	1	2	0	2	5

Source: City of Craig records as of July 2013.

2. South Cove

Table B-12 shows the slip availability and usage for the South Cove Harbor.

Table B-12. South Cove Harbor slips and usage

South Cove	0-20’	21-27’	28-36’	37-45’	46-60’	>60’	Unknown	Total
Number of slips	34	48	22	15	0	0	0	119
Permanent boats	11	24	20	8	1	0	1	65
Transient boats	15	9	9	2	0	0	0	35
Open slips	9	8	0	4	0	0	0	21

Source: City of Craig records as of July 2013

3. Vessels in Slips too Small

Due to limited moorage availability, some vessels which currently use the North or South Cove harbors are in slips which are too small for their vessels. Vessels which are greater than three feet in length overall than their current slip are in slips too small. Vessels in too small of a slip can create maneuvering issues and be exposed to vessel damages.

Table B-13. Vessels in slips too small (by vessel length, not slip size), North and South Cove Harbors

Vessel length	0 – 20’	21’ – 27’	28’ – 36’	37’ – 45’	46 – 60'	>60'
Number of vessels	0	3	17	13	22	0

Source: City of Craig records as of July 2013

Note: Vessels are deemed too big for their current slip if the vessel length overall is greater than 3-feet than the length of stall.

4. Wait Listed Vessels

The City of Craig maintains a waitlist for moorage. Boaters interested in obtaining a permanent slip may apply and pay a fee to be on the waitlist for the appropriate size of their vessel. The City of Craig assigns stalls to vessels on the waitlist as they become available. According to the City of Craig, it is the responsibility of the waitlist applicant to examine their assigned stall and respond within 30 days of notification of a stall assignment. If the stall is not satisfactory, two more offers will be made as openings occur. After a total of three offers, with none being accepted, the applicant's name will be dropped to the bottom of the waiting list.[39] Table B-14 presents a summary of the Craig waiting list.

Table B-14. Craig Waitlist, by vessel length

Vessel length	0 – 20'	21' – 27'	28' – 36'	37' – 45'	46 – 60'	>60'	Total
Number of vessels on waitlist	6	20	25	15	10	2	78

Source: City of Craig records, as of July 2013.

Boaters on the Craig waitlist have faced lengthy waits for permanent moorage, as shown in Table B-15. The average wait time for all vessels is almost six years. The amount of time that vessels spend on waitlists supports the limited moorage availability in the region.

Table B-15. Wait times (average, maximum, and minimum) by slip length

Slip length	0 – 20'	21' – 27'	28' – 36'	37' – 45'	46 – 60'	>60'	All Sizes
Average Wait time (years)	4.76	6.20	5.81	5.83	6.07	2.92	5.79
Max Wait time (years)	11.12	14.21	13.20	13.92	12.81	2.92	14.21
Min Wait time (years)	1.13	1.10	1.12	1.10	2.09	2.92	1.10

Source: City of Craig records as of July 2013.

5. Permanent Vessels

Vessels with permanent moorage at existing Craig small boat harbors are described in Table B-11 and Table B-12. These vessels have moorage agreements with the City of Craig, pay a fee for their moorage, and have a designated slip for their vessel.

According to the Craig Small Boat Harbor Survey, 23 percent of potential harbor users already utilize permanent moorage at Craig.

6. Transient Vessels

Boaters who are on the waitlist for permanent slips, or those who do not need permanent slips can sign up to use transient moorage at Craig. Vessels with transient moorage agreements will utilize either transient docks or available slips (as directed by the harbormaster) on an as-needed basis. Given the lack of available permanent slips, and the frequent harbor use

[39] City of Craig, Moorage Waiting List Application and Contract.

required by some commercial fishermen, transient moorage represents a significant component of overall use of the facilities.

Table B-16 presents the number of transient vessels which used transient moorage at Craig in 2012. Limited data is available regarding the specific entrances and exits to the harbor by each of these vessels. Data from 2012 is utilized throughout this analysis as that was the year for which the Craig Small Boat Harbor survey gathered user data.

Data from the Craig Small Boat Harbor survey show that 48 percent of potential Craig boaters utilized transient moorage at Craig in 2012.

Table B-16. Number of Transient Vessels which used Craig in 2012

Vessel Type	Number
Dive vessel	33
Seine	101
Troll	115
Skiff	55
Pleasure	65
Sport	55
Work	11
Tender	5
Tug	3
Barge	4
Power Skiff	20
Total	**467**

Source: City of Craig records as of April 2013.

7. Boat Launch Users

There are boat launch ramps at the existing small boat harbor facilities. During the season, these ramps typically serve smaller vessels, often engaged in recreational or subsistence boating, who have a more occasional need to access the water. Boat owners who reside in Craig, or store their vessels in Craig during the off-season may utilize the boat launch ramps for pre- and post-season launching and loading of vessels.

According to the results of the Craig Small Boat Harbor survey, approximately 7 percent of potential Craig harbor users reported utilizing boat launch facilities in 2012.

C. Proximity to Other Harbors

Boaters in the region of Prince of Wales Island have several options for alternate harbor facilities. The Craig Small Boat harbor survey asked potential Craig boaters where their vessels were homeported in 2012. Table B-17 presents the responses to this question.

Table B-17. Craig Survey Respondents Vessel Homeports

Homeport	Number of Responses	Percent of Responses
Craig, AK	96	38.25%
Cordova, AK	1	0.40%
Hollis, AK	2	0.80%
Hoonah, AK	1	0.40%
Hydaburg, AK	2	0.80%
Juneau, AK	5	1.99%
Ketchikan, AK	24	9.56%
Klawock, AK	11	4.38%
Petersburg, AK	14	5.58%
Point Baker, AK	3	1.20%
Port Protection, AK	2	0.80%
Sitka, AK	10	3.98%
Thorne Bay, AK	5	1.99%
Wrangell, AK	5	1.99%
Other Alaska	10	3.98%
Outside Alaska:		
California	2	0.80%
Oregon	5	1.99%
Montana	1	0.40%
Washington	46	18.33%
British Columbia	6	2.39%
Total	**251**	

Source: Craig Small Boat Harbor Survey Results.

After Craig, the most popular homeport location is Washington, followed by Ketchikan, Petersburg, and Klawock. The distances between Craig and each of these locations is shown in Table B-18.

Table B-18. Distances between Craig and nearby harbors

Port/Community	One-way distance to Craig (nautical miles)
Seattle, WA	716
Ketchikan, AK	121
Petersburg, AK	113
Klawock, AK	5

Source: NOAA's Distances Between United States Ports, 2012, and estimates using Google Earth.

In Klawock, moorage is provided for about 100 transient and permanent vessels at a partially protected float system.

Figure B-16. Klawock Small Boat Harbor

The City of Ketchikan operates six boat harbors: Bar Harbor South, Bar Harbor North, Thomas Basin, Casey Moran, Knudson Cove, and Hole-In-The-Wall Harbor. Table B-19 summarizes the capacities of these harbors.

Table B-19. Ketchikan Small Boat Harbor Capacity

Harbor Name	Harbor Capacity (number of slips)
Bar Harbor North	303
Bar Harbor South	520
Hole in the Wall Harbor	27
Knudsen Cove Harbor	54
Thomas Basin	240
Casey Moran	45

Source: Demand for Harbors, Dockage, and Other Navigational Needs for Small Boats and Commercial Fishing Vessels in Alaska. Cornell University Human Dimensions Research Unit, May 2006.

Table B-20 presents the total waitlist for moorage at Ketchikan small boat harbor facilities from 2003 through 2011. The City of Ketchikan reports that the drop in the waitlist in 2006 was attributed to the implementation of an annual fee of $20 to remain on the waitlist and the completion of a project to replace two floats at Bar Harbor South. The decreases in 2009 and 2011 are thought to be from the general economic downturn.

Table B-20. Ketchikan Small Boat Harbor Waitlist, 2003-2011

Year	Vessels
2003	210
2004	229
2005	191
2006	132
2007	170
2008	185
2009	114
2010	113
2011	112

Source: City of Ketchikan, as of February 2012.

Primary harbor facilities at Petersburg include 700 slips, 105 transient spaces, 2 tidal grids, working floats, and boat launching facility. Table B-21 describes the capacity of small boat harbor facilities in Petersburg.

Table B-21. Petersburg Small Boat Harbors Capacity

Facility Name	Capacity
Kupreanof Float	8
Middle Harbor	260
North Harbor	148
Papke's Landing	9
South Harbor	220

Source: Demand for Harbors, Dockage, and Other Navigational Needs for Small Boats and Commercial Fishing Vessels in Alaska. Cornell University Human Dimensions Research Unit, May 2006 and Marine Exchange of Alaska website for Petersburg: http://www.mxak.org/ports/southeast/petersburg/petersburg_facilities.html.

D. Moorage Demand Analysis

In the most general sense, the City of Craig has a demand for moorage which exceeds the current supply based upon the fact that the City maintains a waitlist for slips. The alternative harbors as described above already operate at or near capacity and maintain waitlists. This shows that these other harbors cannot be used as a substitute for lack of capacity at Craig. This is further supported by the significant distance between the larger alternate harbor locations and Craig. There are many reasons why a boater may choose to seek moorage at a particular harbor – other than just availability of slips. This analysis utilizes the results of the Craig Small Boat Harbor survey to estimate demand for moorage at Craig.

1. Total Moorage Demand

There are several pieces of information gleaned from survey data utilized to determine moorage demand. Survey response data regarding moorage was broken into categories to represent likely harbor users. The surveyed population represents the population of potential Craig harbor users. Therefore, the response rates from the sample of survey respondents can

be applied to the population to determine how specific survey responses apply to the population.

First, this analysis examined the home addresses of survey respondents. A total of 359 surveys were mailed to vessel owners with Craig home addresses, or approximately 25 percent of total surveys. Eighty-nine survey responses were from boaters with Craig home addresses, representing 26 percent of total survey responses. Respondents with Craig home addresses were then broken down by vessel type (commercial fishing, charter, subsistence, and other), then by vessel length category, and moorage type preferred. Vessel type and length data are pulled directly as reported from each survey response. The moorage preference indicated on each survey is based on survey question 3, which asks for boaters' current moorage at Craig. The moorage preference for each survey also considers the two questions on the survey which asked if respondents would change their type of moorage if additional space was available at Craig. For example, if a respondent reported they currently use transient moorage at Craig, but would utilize permanent moorage if additional space was available, their moorage preference for purposes of this analysis is permanent.

This data was then compiled based on the survey sample. Table B-22 provides an example of this table for Craig home addressed survey respondents. The data contained in this table was then utilized to create the sample proportions of moorage demand which could be applied to the population. For example, based upon survey sample data, 40.45 percent of vessels with Craig home addresses are commercial fishing vessels (36 / 89 = 40.45%). Then, 91.67 percent of commercial fishing vessels will demand permanent moorage (33 / 36 = 91.67 percent). And finally, 3.03 percent of commercial fishing vessels demanding permanent moorage will be in the 0-20-foot vessel size class (1 / 33 = 3.03%).

Table B-22. Moorage demand for survey respondents with Craig home addresses – survey sample data

Description	0-20	21-27	28-36	37-45	46-60	>60	Total
Commercial Fishing Vessels							
Permanent	1	4	5	13	10	0	33
Transient	0	0	2	1	0	0	3
Boat Launch	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0
Total Commercial Fishing	1	4	7	14	10	0	**36**
Charter Vessels							
Permanent	0	0	3	1	0	0	4
Transient	0	0	1	0	0	0	1
Boat Launch	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0
Total Charter Vessels	0	0	4	1	0	0	**5**
Subsistence Vessels							
Permanent	2	3	1	0	0	0	6
Transient	0	1	0	0	0	0	1
Boat Launch	2	0	0	0	0	0	2
Other	0	0	0	0	0	0	0
Total Subsistence Vessels	4	4	1	0	0	0	**9**
Other Vessels							
Permanent	5	11	7	0	2	0	25
Transient	3	5	1	0	1	0	10
Boat Launch	4	0	0	0	0	0	4
Other	0	0	0	0	0	0	0
Total Other Vessels	12	16	8	0	3	0	**39**
Total Vessels	**17**	**24**	**20**	**15**	**13**	**0**	**89**

Source: Craig Small Boat Harbor Survey response data

The same procedure to determine the sample moorage demand categories was conducted for three other categories of survey respondents. The next category was vessel owners who indicated that their vessel was currently homeported in Craig. The third category was vessel owners who did not have Craig home addresses, did not indicate they were currently homeported at Craig, but already utilized Craig for transient moorage or boat launching, or stated a preference for using moorage at Craig in the future. The final category which comprises moorage demand is the other potential users. These are Craig harbor users who do not fit into any of the previous category, but indicated they are currently using Craig facilities in some capacity. These vessels are all transient or boat launch users who are not homeported at Craig and do not have an interest in utilizing permanent slips at Craig if they became available.

The analysis does not include any double-counting between the moorage demand categories. For example, the Craig homeports category was calculated after the Craig home addresses category. To calculate the unique moorage demand for Craig homeported vessels, all Craig home addresses were removed from this category of survey response data. Similar procedures were conducted for the other two categories and the extrapolation from survey sample to population.

The next step is to apply the survey sample proportions to the applicable surveyed population. Surveys mailed to boaters with Craig home addresses comprised approximately 26 percent of the surveyed population, or 359 surveys (after removing surveys which were returned as undeliverable and are not considered part of the population). These 359 surveys represent the population for which moorage demand can be extrapolated for Craig home addresses. However, this analysis takes a conservative approach, and assumes that the population of Craig home addressed surveys is equal to 50 percent of the total, or 180 surveys. This reduction was completed to account for the possibility that some of the unique permit holders surveyed may share a boat. There is no way to account for this practice, so reducing the total population by half was believed an appropriate way to address the issue.

A slightly different approach was used for the other three categories of boaters: Craig homeports, non-Craig homeports, and other potential users. A total of 1,051 surveys were mailed to boaters/permit holders without Craig home addresses. Vessels which reported they were currently homeported at Craig, but did not have a Craig home addresses comprised 7.1 percent of responses. Therefore, the total population of vessels homeported at Craig without Craig home addresses is 75 vessels (1,051 * 7.1 percent).

The third category of vessels are those without Craig home addresses, not currently homeported at Craig, but responded on their survey that they would use moorage at Craig if it were available. These types of boaters comprised 35 percent of survey responses. The expected population of these boaters is equal to 367 (1,051 * 35 percent).

The final category of boaters are those without a Craig home address, who currently utilize some type of moorage a Craig, but did not express an interest in changing their moorage type in the future. These boats represented 10 percent of total survey responses which is equal to an expected population of 109 boaters (1,051 * 10 percent).

These expected population values were then applied to the survey sample proportions for each category to arrive at the expected moorage demand. Table B-23 summarizes the total demand for moorage at Craig utilizing extrapolation of survey results.

Table B-23. Expected Total Craig Moorage Demand

Description	0-20'	21-27'	28-36'	37-45'	46-60'	>60'	Total
Commercial Fishing Vessels							
Permanent	2	14	23	60	45	0	144
Transient	0	0	32	64	152	12	261
Boat Launch	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0
Total Commercial Fishing	2	14	55	125	197	12	**405**
Charter Vessels							
Permanent	0	3	9	5	0	0	17
Transient	0	0	2	0	6	3	11
Boat Launch	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0
Total Charter Vessels	0	3	11	5	6	3	**29**
Subsistence Vessels							
Permanent	4	6	2	0	0	0	12
Transient	0	2	0	0	0	0	2
Boat Launch	4	0	0	0	0	0	4
Other	0	0	0	0	0	0	0
Total Subsistence Vessels	8	8	2	0	0	0	**18**
Other Vessels (Recreation & Yachts)							
Permanent	13	38	20	6	4	3	85
Transient	22	16	27	37	49	19	169
Boat Launch	17	6	0	0	0	0	24
Other	0	0	0	0	0	0	0
Total Other Vessels	52	60	47	44	53	22	**278**
Total Vessels	**62**	**86**	**115**	**173**	**256**	**37**	**730**

Table B-24 presents the expected Craig moorage demand, summarized by type of moorage; 35 percent of vessels demand permanent moorage compared to 61 percent transient.

Table B-24. Craig Moorage Demand, by moorage type

Description	0-20'	21-27'	28-36'	37-45'	46-60'	>60'	Total	Percent
Permanent	19	61	54	72	49	3	258	35%
Transient	22	18	61	102	207	34	444	61%
Boat Launch	21	6	0	0	0	0	28	4%
Other	0	0	0	0	0	0	0	0%
Total	**62**	**86**	**115**	**173**	**256**	**37**	**730**	

2. Excess Moorage Demand

The method utilized above to calculate moorage demand includes vessels already utilizing Craig facilities. Put another way, the moorage demand in the table above is the total moorage demand at Craig. In order to determine the needs for new facilities, this analysis considers the excess (or unmet) moorage demand – those vessels which do not already have a place at existing facilities.

Calculating excess moorage demand is an important consideration for formulation of alternatives as it determines the needed basin size. In order to address the uncertainty in calculations, especially those associated with extrapolating survey results, this analysis utilizes two methods for determining excess moorage demand.

The first method utilizes primarily data provided by the City of Craig regarding current harbor usage. The main components of this moorage demand are the vessels on the Craig waiting list, and the vessels using Craig facilities, but in slips too small for their vessel. In addition, this analysis also considers the number of survey respondents who indicated that they would be willing to relocate to Craig if additional moorage was available. Table B-25 summarizes this approach to estimating demand for moorage at new facilities. This is believed to be a "low" approach and only identifies the demand for permanent moorage.

Table B-25. Craig excess moorage demand, Method 1 (low)

Vessel length	0 - 20'	21' - 27'	28' - 36'	37' - 45'	46 - 60'	>60' [1]	Total
Number of vessels on waitlist	6	20	25	15	10	2	**78**
Number of vessels in stalls too small [2]	0	3	17	13	22	0	**55**
Number of new vessels from survey responses[3]	0	0	8	13	16	0	**37**
Sum of vessels by length	**6**	**23**	**50**	**41**	**48**	**2**	**170**

Notes: 1. The vessel on the waitlist that is >60-feet is listed as a 120-foot vessel.

2. Vessels that are 3-feet or longer than the stall were counted for this evaluation.

3. Vessels not from Craig which indicated on survey responses that they would use Craig Harbor. This includes extrapolation of survey sample results to the population of vessel owners and permit holders.

Source: Craig harbormaster records as of July 25, 2013 and Craig Small Boat Harbor Survey results.

The second method includes information provided by the City of Craig regarding current facility use and incorporates the total moorage demand calculated in the previous section. The first step is to identify the current use of the existing small boat harbors at Craig. Table B-26 summarizes the total number of slips at the North and South Cove Harbors as well as the number of vessels and open slips at both harbors.

Table B-26. Craig North Cove and South Cove Harbors, current usage and open slips

North & South Coves	0-20’	21-27’	28-36’	37-45’	46-60’	>60’	Total
Number of slips	34	55	28	65	35	0	218
Permanent boats	14	28	33	38	26	0	138
Transient boats	15	11	14	9	9	1	59
Open slips	10	9	0	5	2	0	26

Table B-27 summarizes the total moorage demand calculated in the previous section.

Table B-27. Craig Total Moorage Demand Summary

Description	0-20’	21-27’	28-36’	37-45’	46-60’	>60’	Total
Permanent	19	61	54	72	49	3	258
Transient	22	18	61	102	207	34	444
Boat Launch	21	6	0	0	0	0	28
Other	0	0	0	0	0	0	0
Total	**62**	**86**	**115**	**173**	**256**	**37**	**730**

Since the total moorage demand calculations include vessels already using existing facilities, it is necessary to subtract current vessel use and open slips in order to determine the excess moorage demand. Also, the method used to calculate total moorage demand also already includes waitlisted vessels. Vessels on the waitlist should not be subtracted out again as this would lead to double-counting. Subtracting vessels already using Craig facilities and open slips for permanent vessels results in the excess moorage demand presented in Table B-28.

Table B-28. Craig excess moorage demand, method 2 (high)

Vessel Length	0-20'	21-27'	28-36'	37-45'	46-60'	>60'	Total
Permanent	-5	25	21	29	21	3	94
Transient	7	7	47	93	198	33	385
Total	**2**	**32**	**68**	**122**	**219**	**36**	**479**
Note: Negative numbers indicate a surplus of slips in that category.							

E. Current Harbor Conditions

Existing conditions at Craig small boat harbor facilities create inefficiencies for harbor users, including damages, delays, and associated increased costs for operation. These issues were identified in general terms during the planning charette. The discussions at the charette guided development of the Craig Small Boat Harbor survey which questioned users as to the extent they experience these problems.

Based on research and information provided by Craig residents, this analysis assumes that the primary cause of harbor inefficiencies and damages is overcrowding and associated congestion. The excess moorage demand calculated in the previous section is used as a quantitative representation of the overcrowding at Craig in the existing condition.

1. Vessel Damages

Overcrowding in small boat harbors often results in damages to vessels. These damages are due to vessel rafting, hot-berthing, or other operations in a space-constrained harbor. Damages of this type would not be present at a harbor with adequate space to meet demand. Craig residents reported that vessels are damaged as a result of overcrowding and congestion.

To quantify the level of vessel damages, the Craig Small Boat Harbor Survey asked if vessels had sustained damages outside of normal wear and tear as a result of Craig Harbor conditions. Of the 181 respondents to this question, 21 (11.6 percent) reported that their vessel had sustained this type of damage. The proportion of vessels damaged serves as the basis for quantifying the expected level of damages at Craig in the future.

A follow-up question then directed those whose vessels had sustained damage to indicate the kind of damages and costs for repairs for each year from 2008 through 2012. Twenty-two respondents provided this information, and reported a total of 28 vessel damages over that 5-year period. Survey responses showed that there were an average of 5.6 vessel damages per year, with an average repair cost per incident of approximately $1,800 (in 2014 dollars). This data will serve as the basis for quantifying the cost of vessel damages in the future.

Examples of the types of vessel damages reported by Craig harbor users include: hull wear and dents, propeller damage, grounding, and struck by other vessels.

Figure B-17. Example of boats rafting at Craig 2014

2. Vessel Delays

Another frequent issue at overcrowded small boat harbors is vessel delays. Overcrowding often causes vessel delays when vessels are attempting to enter or leave the harbor. In the case of commercial fishing harbors, such as Craig, this can be especially problematic as some

vessels may face delays when attempting to access fishing grounds. Delays in accessing fishing grounds may result in reduced time spent fishing and potentially lower commercial fishing earnings. This analysis does not attempt to quantify reduced commercial harvests resulting from these delays. This analysis focuses on quantifying the delay time associated with entering and leaving the harbor only.

A question on the Craig Small Boat Harbor survey asked vessel owners to list the number of delays in 2012 and the average length of delay, for those who encountered delays getting into or out of Craig Harbor. The survey provided five delay explanations (wait for tide change, another boat had to be moved from my stall, harbor staff not available, had to wait for rafted boat owner to return, and launching delays at ramp) and several spaces for respondents to write in their own delay explanations. Table B-29 shows the number of delays by response category as well as the average number of delays per response and the average length of each delay.

Fifty-eight boaters responded to this question. The most popular reasons for delays were another boat had to be moved from my stall, wait for tide change, and had to wait for rafted boat owner to return, with 28 percent, 24 percent, and 21 percent of responses, respectively. Seventeen percent of total survey respondents experienced at least one delay and the average length of delay was approximately 5 hours.

Table B-29. Craig Harbor Delays in 2012

Reason for Delay:	Number of Responses	Average # of Delays per Response	Average Delay Length (hours)
Wait for tide change	20	3.30	3.68
Another boat had to be moved from my stall	24	2.73	10.64
Harbor staff not available	11	2.45	1.54
Had to wait for rafted boat owner to return	18	3.06	3.03
Launching delays at ramp	3	3.67	1.00
Other	8	2.63	10.00

Note: The 'Other' responses included the following: Ice (two respondents), getting around town due to vehicles and no dock space, congestion (two respondents), not enough staff, no slips, and crowding/poor use of available space.

3. Subsistence Harvests

According to the results of the Craig Small Boat Harbor survey, approximately 3.4 percent of vessels which use Craig harbors are primarily used for subsistence. In nearly all rural Alaskan communities, all vessels are used for subsistence harvesting to some extent, regardless of vessel owners identifying subsistence as the primary purpose of their vessel. In some cases, portions of commercial catch can be retained by vessel owners as subsistence catch, and "personal use" fisheries, which many consider sport fishing, are actually considered commercial catch for this analysis.

Subsistence vessels and subsistence harvests are discussed here as overcrowded harbor conditions can affect these vessels and harvests. In the case of Craig, overcrowded harbor conditions and congestion cause vessel delays and other issues for vessels getting into and out of existing Craig harbors. As stated in the previous section, vessels delayed leaving the harbor may result in reduced earnings potential for commercial fishermen. Similarly, vessels which are constrained at Craig harbors may see a reduced ability to harvest subsistence resources, resulting in an overall lower level of catch. The value of the potential harvest increase can be quantified using estimates for the replacement values of subsistence resources. These calculations will be explored in more detail in subsequent sections.

4. Travel Costs

Overcrowded conditions at Craig mean that some boaters are not able to use facilities in the manner that they would prefer. In the case of Craig, there are boaters who would like to use permanent moorage, but must homeport elsewhere due to a lack of space. The Craig Small Boat Harbor Survey was used to identify these boaters. First, the survey asked respondents to identify their current moorage at Craig. Table B-30 shows the responses to this question.

Table B-30. Current moorage at Craig

Current Moorage at Craig	Number	Percent
Permanent Slip	67	23.34%
Transient Parking	139	48.43%
Boat Launch User	19	6.62%
Don't use Craig Harbor	62	21.60%
Total	**287**	

Next, the survey asked, “If you indicated transient, boat launch user, or you don’t use Craig Harbor, would you seek permanent moorage if it was available?” Most respondents, 80 percent, indicated they would not utilize permanent moorage.

Table B-31. Those who would seek permanent moorage if it was available

Response	Number	Percent
Yes	40	19.90%
No	161	80.10%
Total	**201**	

Those who stated that they would seek permanent moorage at Craig serve as the basis for vessels which could benefit from additional moorage by relocating to Craig.

This analysis then looks more closely at the vessels that indicated a preference for permanent moorage at Craig, but are not already using it. First, the types of vessels which are appropriate for NED analysis must be considered. This analysis only considers commercial vessels for the travel cost reductions. In this case, policy defines commercial vessels as commercial fishing, subsistence, and existing charter fishing vessels. Survey respondents which indicated that

their vessel's primary purpose was recreation are not included. The survey response data shows that there are only five non-commercial fishing vessels interested in permanent moorage at Craig who are not already homeported there. Given this low level of response data, these vessels are not considered in this analysis.

Approximately 22 percent of commercial fishing vessels indicated that they would use permanent moorage at Craig. Some of the respondents reported that their homeport was already Craig. Since these vessels would not benefit in terms of travel costs, this analysis only considers those commercial fishing vessels not already homeported at Craig, or approximately 16 percent of the total commercial fishing vessel respondents. Based on survey response data, the boaters who indicated interest in relocating to Craig are currently homeported at other communities on Prince of Wales Island, in southeast Alaska, and in the Pacific Northwest.

These vessels would benefit from relocating to Craig and boaters would not choose to relocate if it would cost them additional time or money. Since the population surveyed was chosen through permit files for those who fish near Craig, this analysis assumes that survey respondents fish in the vicinity of Craig and would benefit from moorage nearby. In that case, the trips these vessels must take in the existing condition between their current homeport and Craig represent an expense of vessel operating costs and personnel time.

5. Damage to Existing Infrastructure

The City of Craig reports that existing small boat harbor infrastructure is degrading faster than expected due to overcrowded conditions. This is often the case with congested small boat harbors. Overcrowding leads to practices such as vessel rafting, hot-berthing, and berthing vessels in slips which are too small. All of these practices lead to increased wear and tear on moorage facilities, often causing them to require replacement before their expected end of life. In addition, the current North Cove small boat harbor and three docks in the vicinity of the proposed navigation improvements are subject to wave action. These facilities face additional wear and tear through this wave action, which could be reduced or alleviated with navigation improvements at Wards Cove. The proposed navigation improvements will provide additional wave protection to these structures from southwest and northerly waves. Figure B-18 shows these existing docks.

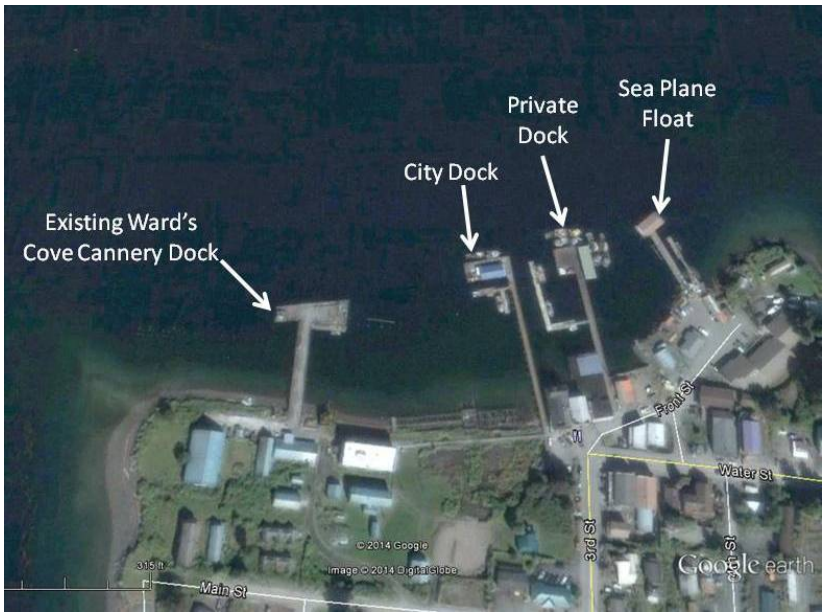


Figure B-18. Existing Docks in the area of proposed navigation improvements

The dock at the existing Wards Cove cannery site is owned by the City of Craig and will be demolished prior to construction of navigation improvements. The existing City Dock, as well as the adjacent private dock and sea plane dock are mentioned here as they may fall behind a future breakwater and may see incidental benefits from increased protection and reduced wave action.

An important note is that harbor maintenance funding is limited for many communities, including Craig. This means that facilities may not actually be replaced or repaired at the required intervals. Regardless of local funding issues, harbor infrastructure faces undue wear and tear from overcrowding and wave action which reduces its useful life. The cost of these damages is most easily represented through the needed interval of replacement. In cases where replacement does not occur on schedule, this method represents an economic or opportunity cost of these replacement activities. It may also represent the cost of interim repair activities which would occur more frequently than replacement at lower costs, but would equal the cost of replacement over the life of the infrastructure. In this case, discounting replacement costs at one point in time may be a conservative approach.

The Craig harbormaster reports that many of the floats in both the North and South Cove harbors were installed in 1985. Some of the floats in the North Cove Harbor were replaced in 1992. According to the harbormaster, all moorage facilities at Craig will be due for major repair or replacement in approximately five years. This means float replacement should occur in 2019. However, replacement of local service facilities (i.e. existing docks and floats) is subject to the availability of local funding and this replacement date is an estimate only.

Figure B-19. Examples of dock damages at Craig's North Cove Harbor

6. Recreational Opportunity – Unit Day Values

Residents of Craig report growth in the tourism industry, specifically recreational and charter vessels, which partially drive the need for additional moorage. A lack of available moorage means that the full growth of sightseeing and charter businesses will not be realized. However, ER 1105-2-100 states that evaluation of benefits to charter fishing and other similar type of craft is based on a change in net income to the owners or operators of all vessels that would be using the harbor facilities in the future without-project condition. Therefore, new charter vessels (and sightseeing or small cruise/excursion vessels) which would utilize Craig as a result of Federal navigation improvements cannot be included in NED benefits.

There are likely other ways in which the recreation fleet at Craig would benefit. Table B-32 lists the primary vessel purpose, as reported by Craig survey respondents. The majority of vessels in Craig are commercial fishing vessels, but the next largest category is recreation.

Table B-32. Craig Vessel Primary Purpose

Vessel Primary Purpose	Number of Responses	Percent of Responses
Recreation Boat	106	32.52%
Subsistence Boat	11	3.37%
Charter/Sightseeing Vessel	12	3.68%
Water taxi Boat	0	0.00%
Commercial Fishing Vessel	164	50.31%
Tender	1	0.31%
Yacht	21	6.44%
Other:	11	3.37%
Total	**326**	

Source: Craig Small Boat Harbor Survey results.

Recreation vessels face the same issues and inefficiencies as commercial vessels resulting from overcrowding and congestion at Craig. However, this analysis only quantifies the costs of these inefficiencies for commercial vessels. There are undoubtedly benefits for the recreation fleet at Craig. These benefits will be calculated utilizing the Corps Unit Day Value (UDV) method and will be described in the following future conditions sections.

7. Recreational Delays – Opportunity Cost of Time

Delay time – including both vessel operating costs and opportunity costs of time – can be quantified for commercial vessels utilizing Craig harbors. Recreational vessels are also subject to delays using Craig facilities. The Unit Day Value method captures the value of the enhanced recreational experience, so this analysis does not attempt to quantify benefits associated with reduced vessel operating costs for recreational vessels. However, the value of time spent delayed at Craig facilities can be quantified for recreational boaters.

As with commercial vessel delay time, this analysis utilizes the responses from the Craig Small Boat Harbor Survey question 7 regarding vessel delays. Approximately 21 percent of respondents to the question of vessel delays were recreational vessels, and another 2 percent were yachts. Table B-33 summarizes the total delay time for recreation boats and yachts.

Table B-33. Craig Harbor Delays, 2012, for Recreation boats and yachts

Vessel Delay Categories	Number of responses	Number of Delays	Total delays (hours)
Wait for tide change	2	11	8
Another boat had to be moved from my stall	9	25.5	31.5
Harbor staff not available	5	16	1.5
Had to wait for rafted boat owner to return	3	10	1.5
Launching delays at ramp	2	7	2.5
Other (ice in harbor)	1	1	1

The value of recreational boaters' time associated with these delays will be calculated in the future conditions sections.

V. FUTURE WITHOUT PROJECT CONDITIONS

This section provides an analysis of future costs of operation for boaters using Craig facilities in the absence of Federal construction. The purpose of this section is to estimate how the issues described in the existing conditions section will affect vessels in the future and to quantify these costs. Wherever possible, these costs have been assigned monetary values and if not possible, are discussed in qualitative terms. The future without-project condition (FWOP) provides a benchmark for comparison of costs under the various alternative navigation improvement scenarios. For the purposes of this analysis, the Federal Fiscal Year 2015 discount rate of 3.375 percent and a 2014 price level is used. The analysis also utilizes a 50-year project period of analysis with a base year of 2017.[40]

This section begins by describing the overall assumptions associated with the future of marine facilities and vessels in Craig in the absence of a Federal project. Then, the next sections provide estimates of the future without-project (FWOP) costs of damages and inefficiencies.

A. Future of the Fleet

The primary vessels for which operational costs are calculated are commercial fishing vessels. This is per USACE policy and because the harbors at Craig serve primarily to support commercial fisheries.[41]

The marine resource assessment section provides a description of the viability of the commercial fisheries near Craig and Prince of Wales Island. The continued sustainability of the commercial fishery is crucial for the vessels which utilize Craig. Available forecasts for commercial fisheries are for the relative near term, in terms of this project's 50-year period of analysis. The assumption of this analysis is that the commercial fisheries utilized by Craig boaters will remain stable. The available data and Alaska's historical management techniques regarding fisheries near Craig support this assumption.

In order to address the uncertainty of forecasting marine resources and their effect on the growth of the vessel fleet, this analysis assumes that the moorage demand for the fleet identified in the existing conditions section is equal to the fleet throughout the 50-year period of analysis. That is, this analysis utilizes a "no-growth" fleet scenario for NED benefits calculation. There is no evidence to suggest the fleet will decrease, and in fact, the land-based processing plant at Craig is expected to attract new vessels to the area.

Utilizing this assumption, the future fleet at Craig is the same as in the existing condition. This fleet is summarized in Table B-34.

[40] The base year for the period of analysis is based on Alaska District estimates from Cost Engineering and H&H which suggest the date of construction completion, when new facilities could be used and benefits would begin accruing.

[41] Recreation is another key component of harbor use, and operational costs and potential benefits for recreational vessels will be examined in subsequent sections.

Table B-34. Total Craig Moorage Demand, Future Without Project Condition

Description	0-20'	21-27'	28-36'	37-45'	46-60'	>60'	Total
Commercial Fishing Vessels							
Permanent	2	14	23	60	45	0	144
Transient	0	0	32	64	152	12	261
Boat Launch	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0
Total Commercial Fishing	2	14	55	125	197	12	**405**
Charter Vessels							
Permanent	0	3	9	5	0	0	17
Transient	0	0	2	0	6	3	11
Boat Launch	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0
Total Charter Vessels	0	3	11	5	6	3	**29**
Subsistence Vessels							
Permanent	4	6	2	0	0	0	12
Transient	0	2	0	0	0	0	2
Boat Launch	4	0	0	0	0	0	4
Other	0	0	0	0	0	0	0
Total Subsistence Vessels	8	8	2	0	0	0	**18**
Other Vessels (Recreation & Yachts)							
Permanent	13	38	20	6	4	3	85
Transient	22	16	27	37	49	19	169
Boat Launch	17	6	0	0	0	0	24
Other	0	0	0	0	0	0	0
Total Other Vessels	52	60	47	44	53	22	**278**
Total Vessels	**62**	**86**	**115**	**173**	**256**	**37**	**730**

B. Future of Moorage Facilities

USACE policy states that planned infrastructure improvements over the period of analysis must be supported in writing by the project proponent. At this time, there is no evidence to suggest the City of Craig or another entity has plans to construct marine improvements in the area.

Local entities are assumed to continue maintaining and rehabilitating existing facilities so there will not be a decrease in the availability of moorage. The FWOP condition moorage availability is the same as in the existing condition. The amount of moorage available at these facilities is shown in Table B-35.

Table B-35. Craig Moorage Facilities, Future Without Project Condition

Facility	Number of slips	Feet of transient moorage
North Cove Harbor	102	700
South Cove Harbor	120	125
City Dock		350
False Is. Dock		223
Total	**222**	**1,398**
Source: City of Craig Comprehensive Plan.		

C. Assumptions

Several assumptions are critical to the validity of this analysis. Overarching assumptions are described in this section, while specific assumptions for each category are described in each section.

As described above, sustained commercial fisheries provide the need for moorage of commercial fishing vessels.

Future without project condition operating costs and later project benefits are quantified primarily for commercial activities. For this analysis, commercial activities are related to commercial fishing, subsistence, and charter/sightseeing vessels. Per ER 1105-2-100, "subsistence fishing is considered commercial fishing". Therefore, benefits to this fleet will be considered commercial. Similarly, "benefits to charter fishing and other similar type craft is based on a change in net income to the owners or operators of all vessels that would be using harbor facilities in the future without-project conditions". Therefore, charter fishing or similar vessels which would exist in the FWOP condition stand to benefit from Federal navigation improvements and those benefits are also considered commercial.

D. Vessel Damages

The damages reported by Craig harbor users are expected to continue in the future without project condition. In the existing condition, approximately 11.6 percent of survey respondents reported that their vessels sustained damage at Craig beyond normal wear and tear. This represents the annual rate of vessel damages at Craig. Based on the moorage demand estimates, there are 730 vessels which will use Craig small boat harbor facilities. This analysis assumes that this is the pool of vessels which could be subject to damages. Applying the survey sample percent results in 85 vessels damaged per year (730 vessels * 11.6 percent).

To determine how different types of vessels will be affected by navigation improvements, this analysis considers the potential fleet of vessels by the type of moorage they demand. Table B-36 summarizes these calculations.

Table B-36. Vessels Damaged by moorage type

Moorage Types	Percent of moorage demand	Number of vessels damaged
Permanent	35%	30
Transient	61%	52
Boat Launch	4%	3
Total		**85**

According to the results of the Craig Small Boat Harbor survey, the average vessel damage repair cost equals $1,809 (updated to 2014 dollars). Table B-37 summarizes the number of damages and repair costs per year.

Table B-37. Craig Small Boat Harbor Survey results – vessel damages per year and costs

Year	Future Without Project		
	Damage events per year	Avg Cost per damage	Avg Cost (2014 dollars)
2008	6	$4,150	$4,704
2009	4	$1,225	$1,372
2010	6	$288	$316
2011	6	$256	$273
2012	6	$2,280	$2,378
Total	**28**		
Average	**5.6**	**$1,640**	**$1,809**

Average damage costs range widely between years – from a minimum of $273 to a maximum of $4,704. To address some of the uncertainty in these values, this analysis utilizes an @Risk triangular distribution with the minimum, average, and maximum damage cost values as parameters. Figure B-20 shows the distribution of costs per vessel damage.

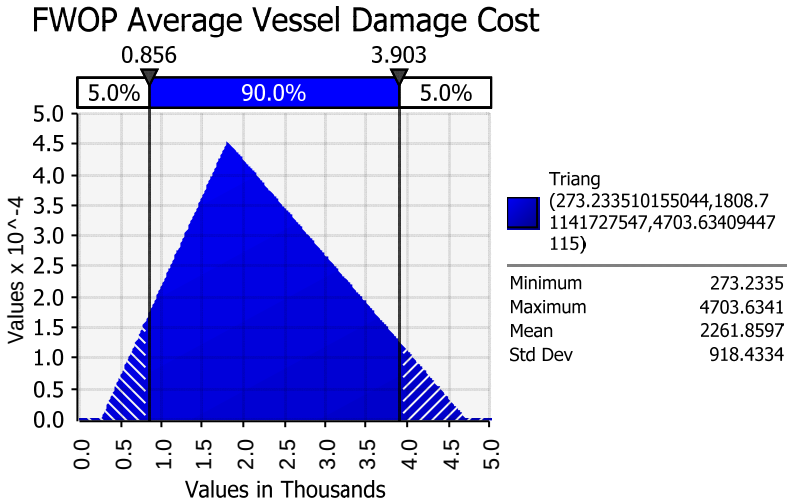


Figure B-20. Future Without Project Condition Average Cost per Vessel Damage, @Risk distribution

The annual cost of vessel damages in the future without project condition is equal to the number of vessels damaged multiplied by the expected cost per damage: 85 vessels multiplied by the damage cost distribution provided above. To utilize the average damage cost distribution in calculations, this analysis utilizes an @Risk simulation with 5,000 iterations. Figure B-21 shows the results of this simulation, with annual vessel damage costs ranging from a minimum of $24,692 to a maximum of $398,039, with a mean of $192,258. This analysis utilizes the mean value for further calculations.

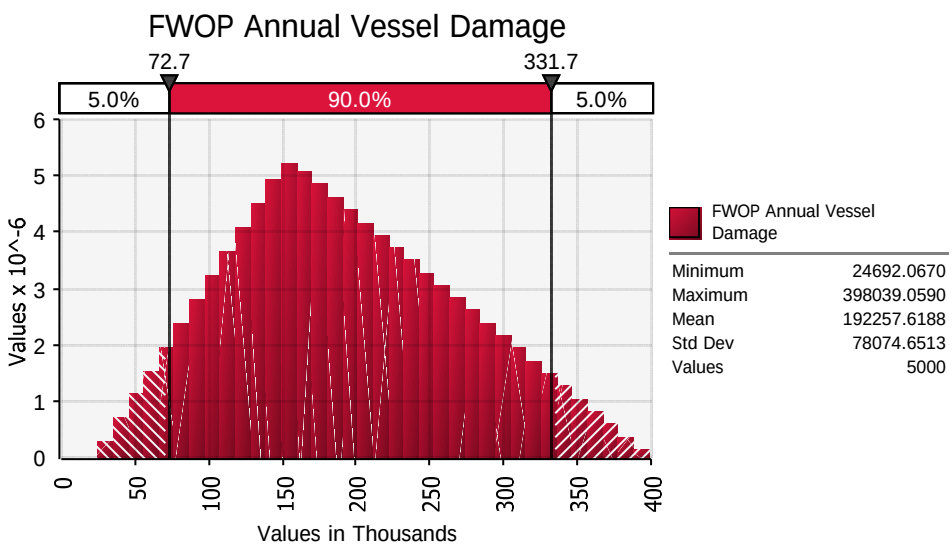


Figure B-21. Future Without Project Annual Vessel Damage Costs, @Risk simulation results

This analysis then again categorizes expected vessel damage costs by moorage type. Table B-38 summarizes these calculations.

Table B-38. Future Without Project Condition Vessel Damages, by moorage type

		Future Without Project Condition	
Moorage Types	**Percent of moorage demand**	**Number of Vessels Damaged**	**Annual damage cost**
Permanent	35%	30	$68,070
Transient	61%	52	$116,905
Boat Launch	4%	3	$7,283
Total		**85**	**$192,258**

The present value of vessel damages over the 50-year project period of analysis is $4.61 million with an average annual value of $192,000.

E. Vessel Delays

The delays faced by vessels entering and exiting Craig harbor facilities in the existing condition are expected to continue in the FWOP condition.

1. Vessel Delay Hours

This category only quantifies delays for commercial fishing, charter, and subsistence vessels. Recreation vessels will be addressed in subsequent sections. The Craig Small Boat Harbor survey provided five vessel delay reasons for which respondents could indicate their delay times in 2012: wait for tide change, another boat had to be moved from my stall, harbor staff not available, had to wait for rafted boat owner to return, and launching delays at ramp. In addition, there were spaces on the survey where respondents could indicate their own delay explanation. All of the “other” delay explanations received can be condensed into two categories: congestion/overcrowding issues, and ice in harbor.

This analysis calculates the percent of vessels experiencing delays for all seven of the delay categories, the average number of delays per boat, and the average delay length (in hours) for each vessel and moorage type. These calculations were conducted first based on the survey sample. The sample data was then applied to the total moorage demand population of vessels which could use Craig harbor. These calculations resulted in a table for each of the vessel delay types which summarized the delay hours by vessel type, moorage type, and vessel length. Table B-39 provides an example of this table for the “Wait for Tide Change” delay.

Table B-39. Delay Hours caused by Waiting for Tide Change, extrapolation of survey sample

Delay Hours, Wait for Tide Change							
Description	**0-20'**	**21-27'**	**28-36'**	**37-45'**	**46-60'**	**>60'**	**Total**
Commercial Fishing Vessels							
Permanent	6.08	43.04	67.86	182.05	135.72	0.00	**434.75**
Transient	0.00	0.00	36.02	72.23	171.41	13.99	**293.66**
Boat Launch	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Other	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Total Comm Fish Vessel Delays	**6.08**	**43.04**	**103.88**	**254.29**	**307.13**	**13.99**	**728.41**
Charter Vessels							
Permanent	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Transient	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Boat Launch	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Other	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Total Charter Vessel Delays	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Subsistence Vessels							
Permanent	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Transient	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Boat Launch	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Other	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Total Subsistence Vessel Delays	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

All seven of the delay categories were then summed to arrive at the total vessel delay hours in the future without project condition. Table B-40 summarizes the total delay hours by type of vessel, type of moorage, and length category.

Table B-40. Total Delay Hours, Future Without Project Condition

Description	0-20'	21-27'	28-36'	37-45'	46-60'	>60'	Total
Commercial Fishing Vessels							
Permanent	34.04	241.12	380.12	1,019.80	760.24	0.00	2,435.32
Transient	0.00	0.00	139.34	279.41	663.04	54.13	1,135.91
Boat Launch	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Comm Fish Vessel Delays	**34.04**	**241.12**	**519.46**	**1,299.21**	**1,423.28**	**54.13**	**3,571.23**
Charter Vessels							
Permanent	0.00	12.96	38.17	21.36	0.00	0.00	72.48
Transient	0.00	0.00	3.76	0.00	11.59	5.80	21.15
Boat Launch	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Charter Vessel Delays	**0.00**	**12.96**	**41.93**	**21.36**	**11.59**	**5.80**	**93.63**
Subsistence Vessels							
Permanent	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Transient	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Boat Launch	8.07	0.00	0.00	0.00	0.00	0.00	8.07
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Subsistence Vessel Delays	**8.07**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**8.07**

2. Vessel Operating Costs

Vessel operating costs for the fleet in Craig are used to calculate FWOP delay costs, and later benefits resulting from navigation improvements. Previous Alaska District studies provided the basis for the methodology and assumptions used to develop these vessel operating costs. The methodology described in this section has been used in several recent Alaska District feasibility studies, including Port Lions (feasibility and Limited Reevaluation Report), Valdez, Homer, and Whittier. The basic framework used for those studies is applicable to Craig, with changes to the input data as appropriate.

Vessel costs are comprised of both fixed and variable costs. Fixed costs are induced upon the owner of the vessel regardless of productive use. Variable costs occur while the vessel is in operation, including the costs for vessel repair and maintenance, the cost of fuel and lubricating oil, and other such costs.

Vessel characteristics are used as a starting point to determine operating costs. One key aspect of vessel characteristics is the vessel investment cost. The operating cost methodology calculates certain vessel costs as a portion of vessel investment cost. In this case, vessel investment costs are best represented by the current selling prices of vessels in various size classes. For this analysis, a web search of various boat brokers was conducted. Table B-41 presents the average vessel investment cost by size category and other pertinent characteristics.

Table B-41. Craig vessels, average investment costs and characteristics

	Typical Vessels in the Craig fleet - Characteristics					
Description[1]	**0-20 feet**	**21-27 feet**	**28-36 feet**	**37-45 feet**	**46-60 feet**	**>60 feet**
Investment[2]	$46,000	$45,000	$100,000	$147,000	$409,000	$360,000
Length x Beam (ft)[1]	18 x 6	22 x 9	32 x 13	45 x 17	58 x 19	100 x 28
Draft (ft)[1]	3	3	4	6	8	14
Fish hold (lb)[1]	N/A	N/A	12,000	30,000	60,000	300,000
Main Power Load rate "B"[1]	Volvo penta gas IO	Volvo penta gas IO	Single Cat 3208 Turbo	Twin Cat 3208 turbo	Twin Cat 308 turbo	Twin 8V71 Detroit Diesel

Notes:
1. Vessel Descriptions and Characteristics taken from previous Corps feasibility studies - Port Lions, Valdez, Homer. These vessels are assumed typical of Alaska commercial fishing and charter vessels. Charter vessels have the same characteristics as commercial fishing vessels.

2. Vessel investment costs from online research of current vessel values - Dock Street Brokers and alaskaboat.com, accessed March 19, 2014.

a. Annual Operating Costs

Total annual operating expenditures, both fixed and variable, include all costs that a vessel owner would be expected to spend in a given year. The fixed expenses for any given vessel operating out of Craig will be unchanged with improved navigation. However, the variable expenses for Craig boaters could change as a result of navigation improvements.

Total operating hours are dependent upon assumptions about fishing season length, time spent fishing, and the number of crew. Research into commercial fishing practices in Alaska suggests that the number of open fishing days per season ranges from 60 to 130, depending on vessel size. The total season hours a commercial fishing vessel may be operating is equal to the number of fishing days per season multiplied by 24 hours per day, and ranges from 1,440 to 3,120 hours. This includes time not actively spent fishing, and may include time motoring between ports or fishing locations, awaiting repairs, or time when the vessel is idle, but still expending resources through refrigeration, processing, ventilation, or other systems onboard. Commercial fishing vessels are assumed to spend an average of 14 hours per days actively harvesting during the fishing season. Therefore, the total harvesting hours per commercial vessel range from 840 to 1,820. Commercial fishing vessels have between 2 and 4 persons on board, including captain, depending on the vessel size. The total man hours per commercial fishing vessel ranges from 1,680 hours (840 harvesting hours * 2 crew members) to 7,280 hours (1,820 harvesting hours * 4 crew members). For this analysis, the calculations for subsistence vessels are the same as for commercial fishing vessels.

The total season hours for charter vessels follow a similar methodology, with slightly different assumptions. The number of open fishing days is the same for charter vessels and commercial fishing. Typical fishing charters in Alaska operate for half- or full-day excursions. This averages 12.5 hours of vessel operations per day including time transiting into and out of port. The total annual harvesting hours per charter boat ranges from 750 (60 fishing days * 12.5 hours per day) to 1,625 hours (130 fishing days *12.5 hours per day). The number of crew members aboard charter vessels ranges from 2 to 4, depending on vessel size. So, the man hours per charter vessel ranges from 1,500 (750 harvesting hours * 2 crew) to 6,500 hours (1,625 harvesting hours * 4 crew).

Table B-42 summarizes the assumptions related to the hours in operation per fishing season.

Table B-42. Craig vessels, operating and season length assumptions

	Vessel Operating Data - Craig Fleet					
Description	**0-20 ft**	**21-27 ft**	**28-36 ft**	**37-45 ft**	**46-60 ft**	**>60 ft**
HP[1]	100-200	100-200	255	510	510	925
Fuel Use Rate[1]						
Low (gph @ 25% power)	6	6	5	10	10	13
Medium (gph @ 50% power)	9	9	9.5	19	19	28
High (gph @ 85% power)	12	12	14	28	28	43
Crew, Charter boats[1]	2	2	3	3	4	4
Crew, Commercial Fishing & Subistence[1]	2	2	3	4	4	4
Potential number open fishing days, per season[2]	60	60	120	130	130	130
Charterboat harvesting hours (12.5 hour days)[3]	750	750	1,500	1,625	1,625	1,625
Man hours per charter vessel[4]	1,500	1,500	4,500	4,875	6,500	6,500
Commercial vessels, total season hours (assumes 24-hrs in operation)[5]	1,440	1,440	2,880	3,120	3,120	3,120
Commercial vessels, total harvesting hours (14-hr days)[6]	840	840	1,680	1,820	1,820	1,820
Commercial vessels, total man hours[4]	1,680	1,680	5,040	7,280	7,280	7,280

Notes:

1. Vessel characteristics and number of crew members are assumptions from previous Corps feasibility reports (Port Lions, Valdez, and Homer) and are representative of Alaskan commercial fishing vessels.

2. Previous Corps feasibility reports assumed an average commercial fishing length season of 130 days for larger vessels. Smaller fishing vessels fish fewer days. This is based on the typical commercial fishing season length, based on searches of records from the State of Alaska Department of Fish and Game.

3. Typical fishing charters in Alaska operate for half- or full-day excursions. This averages 12.5 hours of vessel operations per day including time transiting into and out of port. This row is equal to the number of active days per season multiplied by the number of hours per day.
4. Equal to the number of fishing hours per season multiplied by the number of crew per boat.
5. Total season hours for commercial vessels, equal to the number of fishing days per season multiplied by 24 hours per day. This includes time not actively spent fishing, but may include time motoring between ports, awaiting repairs, or time when the vessel is idle, but still expending resources through refrigeration, processing, ventilation, or other systems onboard.
6. Commercial vessels spend an average of 14-hours per day actively harvesting during the fishing season. This row is equal to the number of days per season multiplied by 14 hours per day in operation.

Fixed Costs. Most fixed costs are calculated as a percentage of vessel investment cost. Hull insurance is equal to 5 percent of investment cost, protection and indemnity (P&I) insurance is 2 percent, and miscellaneous business expenses related to commercial fishing are estimated at 2 percent. Other fixed costs include license and permit fees and association dues, which range from $2,000 to $24,000, depending on the size of the vessel, based on assumptions from previous Corps feasibility studies.

Another fixed cost is food for the fishing crew, estimated at $28 per person, per fishing day. Return on investment is the debt payment for an investment in business assets and is estimated using the Federal interest rate of 3.375 percent for fiscal year 2015 and an average vessel life of 30 years under ideal conditions.

In the case of commercial fishing vessels, the captain and crew are paid through crew shares, which vary based on the skill of the crew, the fishery, and the gross harvest value. For this analysis, crew shares are assumed equal to 50 percent of gross harvest value, assuming a break-even harvest for the year. Under this assumption, crew shares are equal to half of the total annual operating costs. Charter fishing workers are paid hourly so wages are a variable cost. Table B-43 summarizes the annual fixed costs for the Craig fleet, by vessel size category.

Table B-43. Annual Fixed Operating Costs for the Craig Fleet

	Annual Operating Data - Fixed Costs					
Description	**0-20 ft**	**21-27 ft**	**28-36 ft**	**37-45 ft**	**46-60 ft**	**>60 ft**
Fixed Costs[1]						
Hull Insurance @ 5% of investment[2]	$2,300	$2,250	$5,000	$7,350	$20,450	$18,000
P&I Insurance @2%[2]	$920	$900	$2,000	$2,940	$8,180	$7,200
License/permit fees[3]	$991	$991	$5,943	$9,905	$20,141	$24,213
Association dues[3]	$220	$220	$330	$550	$1,101	$1,101
Business Expenses @ 2%[2]	$920	$900	$2,000	$2,940	$8,180	$7,200
Return on Capital @ 3.50 % over 30 years[4]	$2,462	$2,409	$5,352	$7,868	$21,891	$19,268
Food @ ($28 x #fishing days x # crew), Comm Fishing[5]	$3,416	$3,416	$10,248	$14,802	$14,802	$14,802
Food, Charter[5]	$3,416	$3,416	$10,248	$11,102	$14,802	$14,802
Commercial fishing Crew share (1/2 total costs)[6]	$66,905	$66,651	$151,098	$299,178	$376,387	$483,477

Notes:

1. Fixed costs are incurred upon the vessel owner regardless of if the vessel is put to productive use. These operating costs will not be affected by navigation improvements.

2. Research conducted for the Port Lions feasibility study found that some fixed vessel costs are best represented as a percent of the investment cost of the vessel. Hull insurance is estimated at 5% of vessel investment, Protection and Indemnity Insurance at 2%, and Business Expenses at 2%. Since vessel investment costs are up-to-date, these percentages represent current estimates of these items.

3. License and permit fees and Association dues values are derived from the Valdez Feasibility economics appendix, June 2010. Values updated to current dollars using the Consumer Price Index.

4. The average annual value of return on capital of vessel investment is estimated using the current Federal discount rate (3.375 percent), and an average vessel life of 30 years.

5. The Port Lions feasibility report found that food for crew is equal to $20 per person, per day. These values were based on a USACE cost estimate for False Pass from 2000. Using the CPI to update this value to current dollars results in a per person food cost of $28 per day. This is multiplied by the number of days per fishing season.

6. Crew shares for commercial captain and crew are based on 50 percent of gross harvest value, assuming a break-even harvest value. Under this assumption, crew shares would equal half of total annual costs.

Variable Costs. Variable costs are costs which can be foregone when the vessel is not in operation and include: fuel, vessel repairs and maintenance, lube oil and hydraulic fluid, and wages for charter vessel captain and crew.

The expense of fuel depends on the vessel characteristics and the vessel operator's strategic and tactical fishing decisions. The fuel consumption rates vary by vessel type and range from 6 to 12 gallons per hour for 0 to 20-foot vessels to 10 to 28 gallons per hour for 46 to 60-foot vessels. For commercial fishing vessels, this analysis assumes that each vessel operates for 8 hours per day at the high fuel use rate, 12 hours at the medium (or average) fuel use, and 4 hours per day at low fuel use (or idle but utilizing on-board systems). In this case, fuel use per vessel per year ranges from nearly 14,000 gallons to 95,000 gallons. Charter fishing vessels are assumed to operate half time at high fuel use and a quarter of their operations at low fuel use and medium fuel use. Total fuel use per season for charter vessels then ranges from over 7,000 gallons to 52,000 gallons.

Quantifying the cost of this fuel use is dependent upon the price of fuel. The analysis utilizes the average price of #2 marine diesel as reported in Juneau, Ketchikan, Petersburg, Sitka, and Wrangell. These are all of the southeast Alaska ports which report fuel prices to the Pacific States Marine Fisheries Commission monthly fuel price survey, and are believed representative of southeast Alaska fuel prices. The 12-month average (September 2013 through August 2014) fuel price at these ports is equal to $3.70. Fuel costs range from $51,000 to $352,000 for commercial fishing vessels and $27,000 to $191,000 for charter vessels.

An estimate for vessel repair and maintenance expenses is 11 percent of vessel value. This category includes the costs of preparing the vessel to fish at the beginning of the season, preparation for winter storage at the end of the season, in-season maintenances, and other repairs.

Charter fishing vessel wages are a variable cost because wages are only earned when charter outfits are operating. Charter wages are equal to the hourly wages for captain and crew, multiplied by the number of crew members per vessel and the number of fishing days per year. According to the State of Alaska Department of Labor and Workforce Development (ADOL&WD), the hourly wage for a charter vessel captain and crew member is $50.67 and $26.45, respectively (updated to 2014 dollars).

Table B-44 summarizes the annual variable operating costs by vessel size category.

Table B-44. Annual Variable Costs, Craig Fleet

	Annual Operating Data - Variable Costs					
Description	**0-20 ft**	**21-27 ft**	**28-36 ft**	**37-45 ft**	**46-60 ft**	**>60 ft**
Variable Costs[1]						
Charter Wages[2]	$57,841	$57,841	$155,353	$168,299	$211,275	$211,275
Fuel[3]						
Commercial/Subsistence	$50,616	$50,616	$109,224	$236,652	$236,652	$352,092
Charter Vessels	$27,056	$27,056	$58,969	$127,766	$127,766	$190,897
Repair/Maintenance @ 11%[4]	$5,060	$4,950	$11,000	$16,170	$44,990	$39,600

Notes:
1. Variable costs are those incurred when the vessel is in operation.
2. Charter wages are a variable cost because wages are only earned when charter outfits are operating. Charter wages are equal to the hourly wages for captain and crew members, multiplied by the number of crew members per vessel, multiplied by the number of fishing days per year.
3. These are the same annual fuel costs calculated in the "Fuel Calculations" section above.
4. An USACE Alaska District Cost Engineering report for False Pass estimated repair and maintenance expenses at 11 percent of vessel value.

b. Hourly Operating Costs

Hourly variable operating costs are calculated as a range to address some of the uncertainty associated with vessel operating practices and their effects on these calculations. The high range for vessel fuel costs are based on fuel consumption for the hours spent actively fishing. It is calculated by dividing the total fuel cost per season by the total number of vessel hours spent fishing during the season. The low range for fuel costs is based on the fuel consumption for all vessel activities – assuming the vessel is in operation in some capacity for 24 hours per day during the fishing season. The total hourly variable cost is equal to fuel costs plus repair and maintenance and charter wages, as applicable. The mid-range hourly variable cost is an average of the high and low estimates and is used throughout this analysis as the representative vessel operating cost.

Table B-45 and Table B-46 show the hourly variable costs for commercial and charter vessels.

Table B-45. Hourly Variable Cost Summary for Craig Commercial Fishing Vessels

Hourly Cost Summary - Commercial Fishing						
Description	**0-20 ft**	**21-27 ft**	**28-36 ft**	**37-45 ft**	**46-60 ft**	**>60 ft**
Fuel Cost Averaged per hour harvesting	$60.26	$60.26	$65.01	$130.03	$130.03	$193.46
Fuel Cost Averaged per hour for all activities	$35.15	$35.15	$37.93	$75.85	$75.85	$112.85
Variable repair and maintenance	$6.02	$5.89	$6.55	$8.88	$24.72	$21.76
Hourly Variable Costs (Comm Fishing)						
High	$66.28	$66.15	$71.56	$138.91	$154.75	$215.22
Low	$41.17	$41.04	$44.47	$84.73	$100.57	$134.61
Mid Range	$53.73	$53.60	$58.02	$111.82	$127.66	$174.91

Table B-46. Hourly Variable Cost Summary for Craig Charter Fishing Vessels

Hourly Cost Summary - Charter Vessels						
Description	**0-20 ft**	**21-27 ft**	**28-36 ft**	**37-45 ft**	**46-60 ft**	**>60 ft**
Fuel Cost Averaged per hour harvesting	$36.08	$36.08	$39.31	$78.63	$78.63	$117.48
Fuel Cost Averaged per hour for all activities	$18.79	$18.79	$20.48	$40.95	$40.95	$61.18
Variable repair and maintenance	$6.75	$6.60	$7.33	$9.95	$27.69	$24.37
Charter wages	$77.12	$77.12	$103.57	$103.57	$130.02	$130.02
Hourly Variable Costs (Charter)						
High	$119.94	$119.80	$150.21	$192.14	$236.33	$271.86
Low	$102.66	$102.51	$131.38	$154.47	$198.65	$215.57
Mid Range	$111.30	$111.15	$140.80	$173.31	$217.49	$243.71

3. Opportunity Cost of Time

In addition to the operating costs of the vessel, captain and crew members incur an opportunity cost of time (OCT) during unplanned delay time. OCT is the value of time which could otherwise be spent pursuing additional leisure or work activities. This analysis assumes that the captain and crew members of fishing vessels would engage in additional leisure activities if not delayed at Craig. For commercial fishing crew, OCT rates are taken from the report *Value of Time Commercial Fishermen in Alaska Could Save with Improved Harbor Facilities*, conducted by the Cornell University Human Dimensions Research Unit for USACE in September 2006. According to that report, 70 percent of Alaska salmon fishers would use that added time to conduct more fishing activity while 30 percent said they would

use that time for leisure activity. Even though the fishing activity at Craig appears to be growing in some sectors, this analysis takes a conservative approach and assumes that time saved by captains and crews in Craig would elect to use these saved hours as leisure time. According to the Cornell report, the value of a fisherman's leisure time is equal to $75.23 per hour, updated to 2014 dollars.

For charter captain and crew, wage rates from the ADOL&WD are utilized. Economic theory states that OCT or "leisure" rates are equal to 1/3 of wage rates for paid activities. Table B-47 presents these calculations.

Table B-47. Charter Vessel Wage and Opportunity Cost of Time Rates

	Hourly Wage (May 2012)[1]	Hourly Wage (June 2014)[4]	Hourly Leisure Rate[5]
Captain[2]	$48.88	$50.67	$16.89
Crew[3]	$25.51	$26.45	$8.82
Notes & Data Sources:			
1. State of Alaska Department of Labor and Workforce Development, May 2012 Wages in Alaska, Statewide. Captains, Mates, and Pilots of Water Vessels. http://live.laborstats.alaska.gov/wage/index.cfm?at=01&a=000000			
2. Captains wages equal to 90th percentile wage level, as they are experienced vessel operators.			
3. Crew wages equal to average of 10th percentile and median wage level. Bottom third assumed representative of Craig charter crew members.			
4. Wages updated to current using US BLS Employment Cost Index.			
5. Leisure rates are equal to one-third of labor rates.			

4. Total Vessel Delay Costs

Quantifying the costs of vessel delays involves combining the total FWOP delay hours with vessel operating costs and OCT rates. Table B-48 summarizes the total annual delay costs in the FWOP at Craig.

Table B-48. Future Without Project Condition Vessel Delay Costs

Cost of Delays (Vessel Operating Costs and Opportunity Cost of Time), Future Without Project Condition							
Total Delay Costs	**0-20 ft**	**21-27 ft**	**28-36 ft**	**37-45 ft**	**46-60 ft**	**>60 ft**	**Total**
Permanent	$6,951	$50,977	$114,537	$425,367	$325,831	$0	**$923,663**
Transient	$0	$0	$40,191	$115,326	$287,197	$27,419	**$470,134**
Boat Launch	$1,647	$0	$0	$0	$0	$0	**$1,647**
Other	$0	$0	$0	$0	$0	$0	**$0**
Total	**$8,598**	**$50,977**	**$154,728**	**$540,693**	**$613,029**	**$27,419**	**$1,395,444**

The present value of vessel delays over the 50-year project period of analysis is $33.48 million with an average annual value of $1.395 million.

F. Subsistence Harvests

Congestion and overcrowding at Craig means that some residents cannot access their vessels as frequently as they would like and face reduced ability to harvest subsistence resources. This reduced harvest level is expected to continue in the FWOP condition. In general, this analysis compares subsistence harvests in the study community (in this case, Craig) to those of nearby communities. This serves as an estimate for the potential expected increase in subsistence harvest levels in the study community. In this case, the amount of harbor infrastructure on Prince of Wales Island is limited. So there is no clear community against which to compare Craig. This analysis examined the subsistence harvest levels of all communities on Prince of Wales Island and estimated future harvest rates for Craig based on that data.

In the future without navigation improvements, Craig residents will continue to see similar levels of subsistence harvests. Calculations regarding the potential for future harvests will be presented in the future with project conditions section.

According to data from the State of Alaska Department of Fish and Game (ADF&G), Community Subsistence Information System, Craig residents harvested 230.66 pounds of subsistence resources per capita in 1997. This is the most recent year for which complete subsistence harvest information is available. Subsistence harvest data is often limited, so this data is assumed representative of current conditions. There have not been significant changes in the subsistence harvest patterns of Craig residents in the intervening years which would suggest utilizing a different harvest amount.

As the levels of subsistence harvests in the future are based upon the population, this analysis considers the expected rates of change for the population. The State of Alaska Department of Labor and Workforce Development prepares population projections at the borough[42] level. Table B-49 presents the population projections for Prince of Wales Island. These rates of change are used in this analysis to estimate the future population of Craig.

Table B-49. Prince of Wales Island, Alaska Population Projections, 2012-2042

Year	Average Annual Percent Change
2012	
2017	-0.13%
2022	-0.24%
2027	-0.27%
2032	-0.27%
2037	-0.20%
2042	-0.24%

Source: State of Alaska Department of Labor and Workforce Development

[42] A borough is similar to a county.

Table B-50 presents the total Craig subsistence harvest for selected project years. The harvest amounts are calculated based on the Craig population for each year multiplied by the expected future without project subsistence harvest of 230.66 pounds per capita.

Table B-50. Craig population and estimated future without project subsistence harvest, for selected project years

Year	Craig Population	Total Harvest, lbs
2017	1,189	274,263
2027	1,166	268,956
2037	1,136	262,056
2047	1,111	256,312
2057	1,085	250,337
2066	1,063	245,078

Based on the results of the Craig Small Boat Harbor Survey, of boaters who marked subsistence as the primary purpose of their vessel, 51.13 percent demanded permanent moorage, 38.35 percent demanded transient, and 10.51 percent boat launch. Utilizing these assumptions, Table B-51 presents the estimated subsistence harvest by moorage type.

Table B-51. Craig future without project subsistence harvest, by moorage type

Year	FWOP Harvest (lbs), by moorage type		
	Permanent	Transient	Boat Launch
2017	140,242	105,183	28,838
2027	137,528	103,148	28,279
2037	134,000	100,502	27,554
2047	131,063	98,299	26,950
2057	128,007	96,007	26,322
2066	125,319	93,991	25,769

The valuation of subsistence harvests is dependent upon the assumed replacement value of these resources. A study conducted by ADF&G found that the replacement value of subsistence resources ranged from $4.00 to $8.00 per pound in 2012, or $4.17 to $8.34 in 2014 dollars.[43] A recent study conducted for the Alaska District regarding subsistence harvest values on Little Diomede found maximum harvest values of $24.40 per pound, updated to 2014 dollars.[44] The values from the Little Diomede study are higher than the values reported by ADF&G as they represent the total production costs of subsistence resources, rather than a

[43] Subsistence in Alaska, A Year 2010 Update. State of Alaska Department of Fish and Game. Updated to current dollars using the Anchorage Consumer Price Index from the State of Alaska Department of Labor and Workforce Development.

[44] Economic Value of Subsistence Activity, Little Diomede, Alaska, 2011. Survey by Tetra Tech, Inc. Updated to current dollars using the Anchorage CPI.

replacement value. Replacement values are the typical method used to value subsistence resources and consider only the cost of purchasing proteins. The production cost method used for Little Diomede considers all of the resources utilized to harvest subsistence.

The values calculated for Little Diomede are specific to that community and do not necessarily represent the costs to harvest subsistence in Craig. However, including this cost on the distribution of possible subsistence valuations is appropriate for this analysis to address the large range of methodologies for valuing subsistence.

To consider a more local approach, the Alaska District gathered replacement values for various proteins at three grocery stores in Craig in September 2014, as shown in Table B-52.

Table B-52. Protein replacement values from Craig grocery stores

	Price per Pound			
Protein	**Store 1**	**Store 2**	**Store 3**	**Average**
Bacon	$10.69		$6.84	$8.77
Hot Dogs	$2.69		$2.69	$2.69
Ham	$7.99		$6.99	$7.49
Sausage	$5.99		$7.39	$6.69
Slice ham	$8.49			$8.49
Chicken thigh	$1.98		$1.98	$1.98
Pork shoulder	$4.79			$4.79
Eye Round	$6.99			$6.99
Pork ribs	$3.98		$6.99	$5.49
Chuck Steaks	$11.78			$11.78
Beef stew meat	$5.98		$7.29	$6.64
Ground beef	$4.28		$5.79	$5.04
Beef chuck roast	$5.98	$5.10		$5.54
Pork sausage	$4.99			$4.99
NY steaks	$8.99	$10.95	$11.98	$10.64
Rib eye	$9.59			$9.59
Bottom round			$7.79	$7.79
T-Bone			$13.79	$13.79
Flank steak		$8.95		$8.95
Average	**$6.57**	**$8.33**	**$7.23**	**$7.27**

Source:
Data collected at three Craig grocery stores (names concealed here for confidentiality) 19 September 2014.

The subsistence replacement values for this analysis are: $4.17, $8.34, $24.40, and $7.27 per pound. To address the variation associated with these values, this analysis utilizes an @Risk triangle distribution with the parameters: $4.17 (minimum), $11.05 (most likely equal to the average of the four values), and $24.40 (maximum).

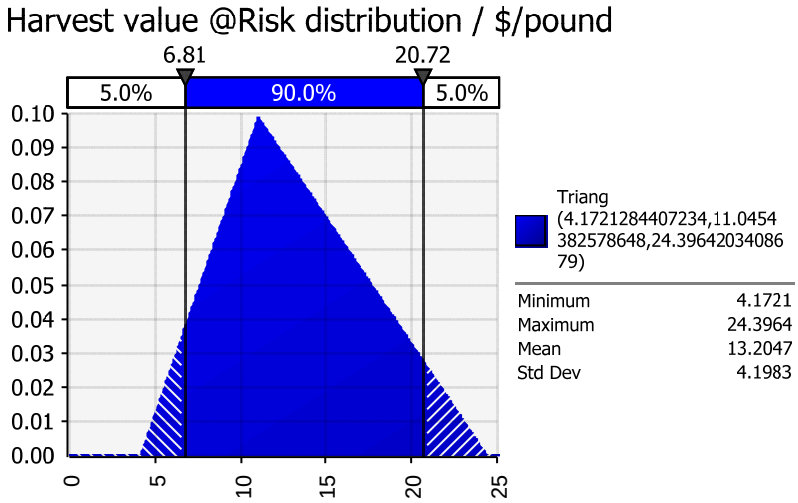


Figure B-22. Subsistence harvest value @Risk distribution

An @Risk simulation with 1,000 iterations was conducted to utilize this distribution of subsistence replacement values in this analysis, with results shown in Figure B-23. This analysis utilizes the mean value of $13.20 per pound for future calculations.

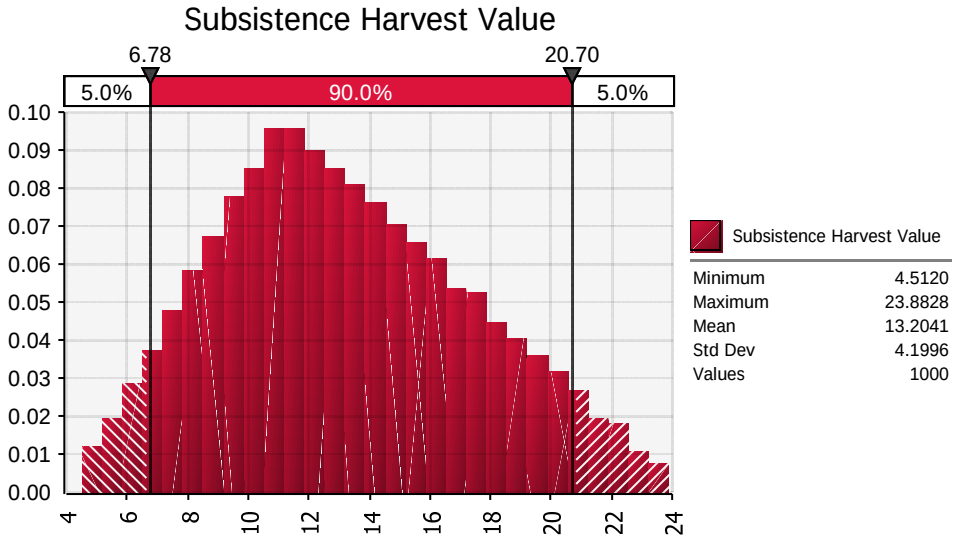


Figure B-23. Subsistence harvest value, @Risk simulation results

The total value of subsistence harvests is equal to the total expected harvest (see Table B-50) multiplied by the mean value per pound of $13.20. Table B-53 summarizes these calculations for selected project years.

Table B-53. Future Without Project Subsistence Harvest Values, for selected project years

Year	FWOP Harvest Value			
	Permanent	Transient	Boat Launch	Total
2017	$1,851,765	$1,388,849	$380,773	$3,621,386
2027	$1,815,931	$1,361,973	$373,404	$3,551,308
2037	$1,769,347	$1,327,034	$363,825	$3,460,206
2047	$1,730,563	$1,297,946	$355,850	$3,384,359
2057	$1,690,219	$1,267,687	$347,555	$3,305,461
2066	$1,654,715	$1,241,059	$340,254	$3,236,027

The present value of subsistence harvests over the 50-year project period of analysis is $83.59 million with an average annual value of $3.48 million.

G. Travel Costs

In the existing condition, there are vessels which would utilize permanent moorage at Craig, but cannot due to space limitations. This analysis assumes that these boaters would prefer to be located in Craig due to its relatively closer proximity to fishing grounds. The surveyed population included only boaters and permit holders near Craig, which supports this assumption. Utilization of permanent moorage at Craig would represent a reduction in these boaters' transportation costs.

In the future without project condition, vessels will continue to transit between their current homeport and Craig. As reported in the existing conditions section, only commercial fishing vessels are considered in this analysis as other vessel types had low response rates. Response data from the Craig Small Boat Harbor survey found that approximately 16 percent of commercial fishing vessels surveyed would utilize permanent moorage at Craig and are not already homeported there. Applying this surveyed proportion to the appropriate surveyed population provides the expected number of vessels which must make additional transits to Craig in the FWOP condition.

Based on survey response data, the commercial fishing vessels which reported they would relocate to Craig primarily use transient moorage at Craig under existing conditions. Therefore, the potential population of vessels is the total transient commercial fleet determined in the moorage demand calculations, equal to 264 vessels. There are approximately 41 vessels (264 vessels * 16 percent) which are not already homeported at Craig but would use permanent moorage there. According to survey results, 87.5 percent of these vessels (or approximately 36 vessels) did not have Craig home addresses. Vessels without Craig home addresses are those which must transit to Craig in the FWOP condition.

Survey respondents provided their vessel's current homeport. This homeport data was grouped into three regions: Pacific Northwest, Prince of Wales Island, and Other Southeast Alaska. The average distances between Craig and each of these regions will be used to determine vessel travel in the FWOP condition. Table B-54 shows the survey proportions of

each region and the expected number of vessels from each region when applying the survey proportion to the population.

Table B-54. Commercial fishing vessels without Craig home addresses, by region of origin, survey proportion and expected population

Commercial vessels going to:	Percent	Number
Pacific Northwest	14%	5
Prince of Wales Island	14%	5
Other SE AK	71%	26
Total		**36**

Table B-55 shows the average distance between each region and Craig.

Table B-55. Average Distance between Craig and selected regions

Region	Average one-way distance from Craig (nm)
Pacific Northwest	716
Prince of Wales Island	80
Other SE AK	122

Source: NOAA's Distances Between United States Ports and estimates using Google Earth.

The next step is to determine the expected size of the vessels which indicated a preference for permanent moorage at Craig. Once again, the sample proportions of vessel size categories were applied to the expected surveyed population of 36 commercial fishing vessels. Table B-56 summarizes the results of these calculations.

Table B-56. Number of commercial fishing vessels which could relocate to Craig, by region of origin and vessel size class

Commercial fishing vessels going to:	Number of Vessels
Pacific Northwest	
0-20 ft	0
21-27 ft	0
28-36 ft	0
37-45 ft	0
46-60 ft	5
>60 ft	0
Prince of Wales Island	
0-20 ft	0
21-27 ft	0
28-36 ft	5
37-45 ft	0
46-60 ft	0
>60 ft	0
Other SE AK	
0-20 ft	0
21-27 ft	0
28-36 ft	3
37-45 ft	13
46-60 ft	10
>60 ft	0
TOTAL	**36**

Information on vessel speeds is necessary to determine the amount of time vessels spend transiting between Craig and their respective homeport regions. The Craig Small Boat Harbor Survey asked for vessel speeds while cruising, fishing, and in port. The vessels in this category are assumed be cruising between their current homeport location and Craig, so vessel cruising speeds are utilized. Table B-57 shows vessel speeds by length category.

Table B-57. Average Vessel Cruising Speed, in knots, Commercial Fishing Vessels, by vessel length

Vessel Size Classes:	0-20’	21-27’	28-36’	37-45’	46-60’	>60’
Commercial fishing vessels only						
Average Cruising speed (knots)	20.00	20.78	8.47	7.82	7.99	8.42

Source: Craig Small Boat Harbor Survey results

Table B-58 summarizes the total travel costs per round-trip for vessels without Craig home addresses.

Table B-58. Round Trip Travel Costs – Vessels not homeported at Craig, and without Craig home address

Commercial fishing vessels, by current homeport region	Number of Vessels	Nautical Miles (RT)	Hours	Vessel Operating Hourly Rate	Hourly Leisure Rate	Number of Crew	Roundtrip Cost
Pacific Northwest							
0-20 ft	0	1,432	72	$53.73	$75.23	2	$0
21-27 ft	0	1,432	69	$53.60	$75.23	2	$0
28-36 ft	0	1,432	169	$58.02	$75.23	3	$0
37-45 ft	0	1,432	183	$111.82	$75.23	4	$0
46-60 ft	5	1,432	179	$127.66	$75.23	4	$397,656
>60 ft	0	1,432	170	$174.91	$75.23	4	$0
Prince of Wales Island							
0-20 ft	0	160	8	$53.73	$75.23	2	$0
21-27 ft	0	160	8	$53.60	$75.23	2	$0
28-36 ft	5	160	19	$58.02	$75.23	3	$27,736
37-45 ft	0	160	20	$111.82	$75.23	4	$0
46-60 ft	0	160	20	$127.66	$75.23	4	$0
>60 ft	0	160	19	$174.91	$75.23	4	$0
Other SE AK							
0-20 ft	0	245	12	$53.73	$75.23	2	$0
21-27 ft	0	245	12	$53.60	$75.23	2	$0
28-36 ft	3	245	29	$58.02	$75.23	3	$21,192
37-45 ft	13	245	31	$111.82	$75.23	4	$166,956
46-60 ft	10	245	31	$127.66	$75.23	4	$135,792
>60 ft	0	245	29	$174.91	$75.23	4	$0
TOTAL	36						**$749,333**

This analysis assumes that each of these vessels would make one round trip between Craig and their current homeport every two years. Since these boaters are already fishing near Craig, it is likely that they keep their vessels at Craig, utilizing transient moorage or boat launching, for the majority of the time. However, periodic trips to their current homeport are necessary. Therefore, this roundtrip travel cost will accrue every other year through the period of analysis.

The vessel operating costs, leisure rates, and number of crew are the same data utilized in the vessel delays section.

According to survey results, there are also commercial fishermen with Craig home addresses who do not use existing Craig harbors as a homeport, but indicated a preference to do so. In the FWOP condition, these boaters must also make trips between their current homeports and Craig.

Approximately 15 percent of survey respondents with Craig home addresses reported being homeported elsewhere. Applying this percentage to the population of Craig home addressed surveys, and the portion of commercial fishing vessels results in 29 commercial fishing vessels with Craig home addresses that are not homeported at Craig. Applying sample proportions regarding the region of origin and vessel length provides more detail regarding these vessels.

Table B-59 summarizes the total travel costs per round-trip for vessels with Craig home addresses, not currently homeported there, but indicating a preference for permanent moorage at Craig. This analysis assumes that these vessels would make one trip per year between Craig and their current homeport location. This increased frequency represents the fact that these vessel owners live in Craig and would likely access the community more frequently.

Table B-59. Future Without Project Travel Costs – Vessels not homeported at Craig, with Craig home addresses

Commercial fishing vessels, by current homeport region	Number of Vessels	Nautical Miles (RT)	Hours	Vessel Operating Hourly Rate	Hourly Leisure Rate	Number of Crew	Roundtrip Cost
Pacific Northwest							
0-20 ft	1	1432	72	$53.73	$75.23	2	$13,052
21-27 ft	2	1432	69	$53.60	$75.23	2	$25,110
28-36 ft	1	1432	169	$58.02	$75.23	3	$64,216
37-45 ft	0	1432	183	$111.82	$75.23	4	$0
46-60 ft	0	1432	179	$127.66	$75.23	4	$0
>60 ft	0	1432	170	$174.91	$75.23	4	$0
Prince of Wales Island							
0-20 ft	4	160	8	$53.73	$75.23	2	$5,833
21-27 ft	7	160	8	$53.60	$75.23	2	$11,222
28-36 ft	5	160	19	$58.02	$75.23	3	$28,700
37-45 ft	0	160	20	$111.82	$75.23	4	$0
46-60 ft	4	160	20	$127.66	$75.23	4	$30,650
>60 ft	0	160	19	$174.91	$75.23	4	$0
Other SE AK							
0-20 ft	1	245	12	$53.73	$75.23	2	$2,228
21-27 ft	2	245	12	$53.60	$75.23	2	$4,287
28-36 ft	1	245	29	$58.02	$75.23	3	$10,964
37-45 ft	0	245	31	$111.82	$75.23	4	$0
46-60 ft	1	245	31	$127.66	$75.23	4	$11,709
>60 ft	0	245	29	$174.91	$75.23	4	$0
TOTAL	29						**$207,972**

The total FWOP travel costs for vessels which could relocate to Craig are the sum of those with and without Craig home addresses.

The present value of vessel travel costs over the 50-year project period of analysis is $14.129 million with an average annual value of $589,000.

H. Infrastructure Damage

In the future without project condition no new infrastructure at Craig is expected. And, the level of harbor use is assumed to remain at its current level. This means that the issues associated with overcrowding and congestion will continue in the future. This includes the degradation and reduced life of existing small boat harbor infrastructure due to both overcrowding and wave action.

As described in the existing conditions section, damage to existing infrastructure is often calculated as a reduced life of facilities. In this case, the benefit of navigation improvements will be the reduced frequency of replacement of floats. This method serves to estimate the effects of overcrowding and wave action on existing facilities and may not represent actual repair or replacement activities.

Based on input from the Craig harbormaster, this analysis assumes that the floats in the North and South Cove harbors need to be replaced every 20 years in the FWOP condition. The cost for float repairs is based on a recent Alaska District cost estimate for float replacement at Seldovia, Alaska. Table B-60 presents information on the small boat harbor infrastructure at Seldovia, and the alternative plans for replacement identified in a 2011 technical report.

Table B-60. Seldovia Small Boat Harbor Infrastructure characteristics

Plan #	Description	Main Float Length	# Finger Floats	Length of finger floats (ft)	Number of slips	Total length of floats (feet)
1	Replace N. Main Float, Floatplane dock	712			0	712
2	Replace A float & finger floats	225	9	42	18	603
3	Replace B float and finger floats	250	18	32	36	826
4	Replace C float and finger floats	287	20	32	40	927
5	Replace D float and finger floats	287	10	32	20	607
6	Replace E float and S. Main Float	437	14	32	30	885

Source: Seldovia Small Boat Harbor Improvements Technical Reports, February 2011. USACE for the Denali Commission.

The North Cove harbor at Craig has 102 slips and 700 feet of transient moorage. The North main float, A, B, D, and E floats at Seldovia total 712 feet of dock plus 104 slips. The replacement costs for these facilities are assumed representative for the North Cove.

The South Cove harbor has 120 slips and 125 feet of transient moorage. The equivalent docks at Seldovia are the South main float, B, C, D and E floats, which total 126 slips. Table B-61 shows the estimated float replacement costs for Craig infrastructure utilizing equivalent Seldovia facilities. The costs are updated to 2014 dollars.

Table B-61. Existing Craig small boat harbor infrastructure and estimated replacement costs

Description of Existing Craig infrastructure[1]:	# slips	Transient moorage (ft)	Float Replacement Cost estimate (2014 $)
North Cove[2]	102	700	$6,566,000
South Cove[3]	120	125	$5,232,000
Notes:			
1. Craig Harbor characteristics provided by the Craig harbormaster.			
2. Replacement costs for North Cove based on Seldovia costs for: North Main float, A, B, D, and E floats (totals 712 feet dock plus 104 slips)			
3. Replacement costs for South Cove based on Seldovia costs for: South Main float, B, C, D, and E floats (126 slips)			

Utilizing this cost information, the total replacement cost for Craig floats is approximately $12 million, at each replacement interval of 20 years, assuming first replacement occurs in 2019.

The present value of infrastructure replacement over the 50-year project period of analysis is $19.01 million with an average annual value of $792,000.

I. Recreational Opportunity

This analysis uses the unit day value (UDV) method as described in Corps Economic Guidance Memorandum (EGM 15-03) for fiscal year 2015 to estimate the value of recreational use of Craig Harbor. The EGM provides guidelines for assigning point values to recreation activities and provides a table showing the range of daily values that correspond to point value scores. Points are awarded based on five criteria that address the quality of the site, the number and types of activities enjoyed at the site, and the availability of substitutes for the site. The UDV method then uses this point system to determine day values for recreation.

A focus group of recreational boaters from Craig was convened in September 2014 to assign point values to each of the five criteria for the recreation experience analysis. Each member of the focus group was familiar with Craig small boat harbors based on both personal use and familiarity with issues related to the harbor. Each harbor user received the selection criteria for review and was requested to complete their responses by assigning values to each of the five criteria on an individual basis. This process was completed based on future without and future with project conditions. For the with-project condition, the focus group was instructed to consider additional small boat harbor facilities at Wards Cove. Responses were accepted as-is, and were averaged to obtain point scores for the future without- and with-project conditions.

1. General or Specialized Recreational Activity

According to the Economic Guidance Memorandum, outdoor recreation activities can be classified as either "general" or "specialized". General refers to a recreation day that primarily involves activities attractive to outdoor users and that generally require the development and maintenance of convenient and adequate facilities. In contrast, specialized refers to a recreation day that involves activities where opportunities are more limited, intensity of use is low, and a high degree of skill is required. Alaska District analysis concluded that based on the above criteria, the remote location of Craig facilities, and the specialized characteristics of the sport fishery in Craig, that harbor-related recreation activities should be categorized as "specialized".

Craig has two categories of recreational users – those who engage in specialized fishing and those who come from the specialized recreational experience of sightseeing tours, whale watching, wildlife viewing, and other non-fishing recreational boating (such as yachts sailing through the area).

2. Craig Unit Day Value Results

Table B-62 presents the assigned point values for Craig in both the future without and with project conditions along with the rationale for each rating. These ratings are the average values as reported by focus group participants.

Table B-62. Unit Day Values Without and With-Project Conditions, Craig

Criteria	Point Range	Points Without Project	Points With Project	Rationale
Recreation Experience	0-30	8.2	15.3	Harbor weekend and holiday use is crowded with close proximity to fishing grounds and commercial fish processor in town. Moderate use during weekdays. Decision based on numerous factors such as high quality of the fishing experience and willingness of charter clients to pay from $190 to $275 for the opportunity to fish along with plane fare for out of town recreation users. Non-fishing recreation customers pay between $145 to $200 for the sightseeing and water taxi opportunities. Recreation destination will be enhanced with project.
Availability of Opportunity	0-18	11.7	9.2	No comparable opportunities within two-hours travel time, although recreational opportunities abound in Alaska.
Carrying Capacity	0-14	7.3	10.3	Adequate facility that currently accommodates multiple users. Prince of Wales Island and surrounding area fisheries are well managed but not overcrowded. Only limitations on carrying capacity might be in the form of reaching maximum commercial and sport fishing quotas.
Accessibility	0-18	9.2	15.3	Remote access, good roads on island within site although parking is an expressed concern. Assume with-project conditions will relieve overcrowded parking condition.
Environmental	0-20	12.2	15.2	Above average aesthetic quality; any limiting factors can be reasonably rectified. Limiting factor for aesthetic quality concerns the crowded conditions at the harbor and launch ramp. Additional aesthetic concerns are the visions of the clearcut areas on the island from the timber industry activity. Overcrowded conditions are significantly improved with project. Clearcut areas of the surrounding mountains will not be changed under with project conditions.
Total Points	**100**	**48.5**	**65.3**	

Source: USACE Economic Guidance Memorandum 15-03, Unit Day Values for Recreation for Fiscal Year 2015 and average of responses from Craig focus group, September 2014.

3. Conversion of Points into Dollars

One of the advantages of the UDV methodology is that EGM 15-03 provides an accepted, reliable, and valid way to translate points into dollar values. Table B-63 shows the conversion of assigned points to representative unit day values.

Table B-63. Points and Unit Day Values for Craig Harbor, Future Without and With Project Conditions

	Future Without Project		Future With Project	
Type of Recreation	Points	UDV	Points	UDV
Specialized Fishing & Hunting	49	$32.67	65	$36.99
Specialized Recreation other than Fishing & Hunting	49	$23.17	65	$28.57

Source: Points from Craig focus group responses, September 2014. UDVs from USACE EGM 15-03.

4. Harbor Use – Baseline Recreation Information

Recreational boaters using Craig small boat harbor facilities are comprised of three categories: sport/recreational fishing, charter boat passengers (both fishing and sightseeing), and independent travelers.

Information about recreational fishing use of Craig facilities was obtained from the State of Alaska Department of Fish and Game Alaska Sport Fishing Survey for Prince of Wales Island. Table B-64 presents the saltwater recreation angler days for Prince of Wales Island from 2003 through 2012. This analysis utilizes the most recent three-year average to represent the baseline level of recreational fishing activity at Craig. Values for Prince of Wales Island are utilized as representative given that Craig has the largest population and small boat harbor infrastructure on Prince of Wales Island and a large portion of recreational fishing occurs in the vicinity of Craig. In addition, navigation improvements at Craig will likely improve the recreational experience of all sport fishermen in the region.

Table B-64. Recreation Angler Days, Prince of Wales Island, Saltwater

Year	Recreation Angler Days
2003	53,818
2004	57,628
2005	68,468
2006	58,206
2007	63,110
2008	64,944
2009	49,075
2010	51,566
2011	59,834
2012	66,100
Avg (2010-2012)	59,167

Source: State of Alaska Department of Fish and Game, Alaska Sport Fishing Survey, Prince of Wales Island Sport Fish Harvest and Effort (2003-2012).

The second group of recreational users of Craig harbor is customers who engage in charter fishing and sightseeing trips. According to the moorage demand estimates determined in conjunction with Craig small boat harbor survey results, there are 29 charter vessels which

utilize Craig. Interviews with Craig charter operators were conducted to determine the number of passengers per trip, trips per season, and the amount of trips (or passengers) related to fishing versus sightseeing or other non-fishing activities. Table B-65 summarizes the results of interviews with charter operators. In general, charter operators at Craig operate between 50 and 100 trips per year, with 3 to 4 passengers on board. Trips are almost exclusively for fishing; interviews found an average of 97.5 percent of trips for fishing and only 2.5 percent of trips were for sightseeing, wildlife viewing, or other similar non-fishing activities.

Table B-65. Craig Charter vessels and passengers

Charter Fleet	Number
Permanent Vessels	17
Transient Vessels	11
Total Vessels	**29**
Average customers per trip	3.75
Average trips per season	66.4
Total Annual Charter Customers	**7,218**

The third group of recreational users of Craig small boat harbor facilities are independent travelers, or boaters (such as yachts or sailboats) who use Craig small boat harbor facilities for activities other than sport or charter fishing. For this analysis, these are boaters who marked their primary vessel purpose as "yacht" on the Craig small boat harbor survey. Combining these responses with the expected population values of Craig boaters results in 48 yachts demanding moorage at Craig. To determine the estimated use of Craig facilities by these independent travelers, an estimate of the number of passengers per vessel is needed. This analysis assumes that there are approximately 4.7 passengers per vessel, based on the average group size of Alaska tourism activities, as presented in the most recent Alaska Visitor Statistics program.[45] Combining the expected passengers per vessel with the number of vessels results in 227 independent travelers per year using Craig.

Based on Craig survey results, the majority of independent travelers use transient moorage at Craig. Lacking data on the number of days per trip to Craig, this analysis assumes that each vessel represents a one-day stop in Craig. This is a conservative assumption, but its basis is that most of these independent boaters will only be passing through Craig.

5. Expected Change in Recreational Use

The values of recreational use presented in the previous section represent the baseline or existing condition use. Recreational use of Craig harbors facilities is expected to change in future conditions. This analysis utilizes population projections for Prince of Wales Island as a proxy for this expected change. Table B-66 presents these values as reported by the State of

[45] Source: Alaska Visitor Statistics Program VI: Summer 2011. McDowell Group, Inc. for the State of Alaska Department of Commerce, Community, and Economic Development.

Alaska Department of Labor and Workforce Development. Population change estimates are only available at the borough level, so these rates are used as representative for Craig.

Table B-66. Average Annual Population Change, Prince of Wales Island

Year	Average Annual Percent Change
2012	
2017	-0.13%
2022	-0.24%
2027	-0.27%
2032	-0.27%
2037	-0.20%
2042	-0.24%

Source: State of Alaska Department of Labor and Workforce Development

Table B-67 presents the expected number of recreational visits to Craig, by type of recreational user, for selected years.

Table B-67. Craig Recreational Visitation for selected project years

Year	Number of Visitor Days					
	Recreational Fishing		Charter Boats		Independent Travelers	
	Specialized Fishing	Specialized Sightseeing	Specialized Fishing	Specialized Sightseeing	Specialized Fishing	Specialized Sightseeing
2012	59,167	0	7,038	180	0	227
2017	59,093	0	7,029	180	0	227
2027	57,949	0	6,893	177	0	222
2037	56,463	0	6,716	172	0	217
2047	55,225	0	6,569	168	0	212
2057	53,938	0	6,416	165	0	207
2066	52,805	0	6,281	161	0	203

6. Future Without Project Unit Day Values

Table B-68 shows the future without project condition Unit Day Values for Craig for selected project years. These values are based on the input data as described in the previous sections.

Table B-68. Unit Day Values for Craig Small Boat Harbor Future Without-Project Condition

Year	Future Without-Project Condition Unit Day Values					
	Recreational Fishing		Charter Boats		Independent Travelers	
	Specialized Fishing	Specialized Sightseeing	Specialized Fishing	Specialized Sightseeing	Specialized Fishing	Specialized Sightseeing
2012	$1,932.798	$0	$229,905	$4,181	$0	$5,260
2017	$1,930,381	$0	$229,617	$4,176	$0	$5,253
2027	$1,893,026	$0	$225,174	$4,095	$0	$5,152
2037	$1,844,464	$0	$219,397	$3,990	$0	$5,019
2047	$1,804,034	$0	$214,588	$3,903	$0	$4,909
2057	$1,761,977	$0	$209,586	$3,812	$0	$4,795
2066	$1,724,965	$0	$205,183	$3,732	$0	$4,694

The present value of the recreational experience in Craig over the 50-year project period of analysis is $50.08 million with an average annual value of $2.09 million.

J. Recreational Delays – Opportunity Cost of Time

This category quantifies the opportunity cost of time for recreational boaters which experience delays using Craig small boat harbors. Vessel operating costs for recreational boats are captured through Unit Day Value method estimates, but this analysis assumes that the equivalent value of delay time should be quantified separately and is not explicitly captured using the UDV method.

Table B-69 presents the number of responses to the vessel delays question from recreation, yacht, and "other" vessel types. These are the vessel types which are not considered as commercial in this analysis and have not been quantified in the previous vessel delays category. The low level of response data for most delay categories means that these responses do not comprise a representative sample of boaters and are not appropriate for extrapolation to the surveyed population. For this analysis, only "Another boat had to be moved from my stall" will be extrapolated: response data from all other categories will be used as-is.

Table B-69. Number of responses, by delay category, for recreation, yachts, and "other" vessels

Vessel Delay Categories	Number of responses
Wait for tide change	2
Another boat had to be moved from my stall	9
Harbor staff not available	5
Had to wait for rafted boat owner to return	3
Launching delays at ramp	2
Other (ice in harbor)	1

Source: Craig Small Boat Harbor Survey results

Table B-70 presents the delay hours per year for delay categories which will not be extrapolated to the population. These delay hours are assumed representative of the future without project recreational vessel delays for these categories.

Table B-70. Delay hours for categories not extrapolated

Vessel Delay Categories	Number of boats delayed	Number of delays	Total delay hours reported
Wait for tide change	2	11	8
Harbor staff not available	5	16	1.5
Had to wait for rafted boat owner to return	3	10	1.5
Launching delays at ramp	2	7	2.5
Other (ice in harbor)	1	1	1
Total	**13**	**45**	**14.5**

Source: Craig Small Boat Harbor Survey results

Table B-71 presents the delay hours for "Another boat had to be moved from my stall", including extrapolation to the surveyed population.

Table B-71. Extrapolated delay hours for "Another boat moved from my stall"

Another boat moved from my stall	
Number of waits	34.5
Number of boats experiencing delay	10
Percent of boats experiencing delay	6.62%
Avg. number of waits per boat	3.45
Avg. delay length (hours)	4.5
Total delay hours	**285.48**

The future without project delay hours for all categories total approximately 300 hours.

This analysis assumes that recreational boaters would choose to engage in additional leisure activities if not delayed at Craig. The value of leisure time is equal to one-third of wage rates. This analysis utilizes the average hourly wage rate for Prince of Wales Island workers, as reported by the State of Alaska Department of Labor and Workforce Development.[46] The 2009-2013 average wage rate for Prince of Wales Island is $13.45 (updated to 2014 dollars), which is equivalent to a leisure rate of $4.48 per hour.

Combining the expected delay hours for recreational vessels with the value of their leisure time results in $1,000 annually of recreational opportunity cost of time.

The present value of recreational opportunity cost of time in Craig over the 50-year project period of analysis is $32,000 with an average annual value of $1,000.

[46] State of Alaska Department of Labor and Workforce Development, Research and Analysis Section, Alaska Local and Regional Information. http://live.laborstats.alaska.gov/alari/

K. Summary of Future Without-Project Conditions

Table B-72 summarizes the future without-project condition at Craig and forms the basis for comparison for the future with-project alternatives.

Table B-72. Summary of Future Without-Project Conditions

Category:	Net Present Value	Average Annual
Vessel damages	$4,613,000	$192,000
Vessel delays	$33,482,000	$1,395,000
Subsistence	$83,590,000	$3,484,000
Travel Cost	$14,129,000	$589,000
Infrastructure Damage	$19,009,000	$792,000
Recreation UDV	$50,076,000	$2,087,000
Recreation OCT	$32,000	$1,000
Total	**$204,931,000**	**$8,540,000**

Note: Values have been rounded to the nearest thousand.

The present value of the future without project condition costs over the 50-year project period of analysis is $204.93 million with an average annual value of $8.54 million.

VI. ALTERNATIVES CONSIDERED

The planning charette held in Craig in November 2012 resulted in the selection of a site and development of preliminary alternatives. After design of the initial array of alternatives, the project delivery team held a follow-up meeting in Craig in February 2014. Community representatives suggested further changes to the alternatives, which led to refining the harbor designs.

A. Alternative Formulation

Once the Wards Cove Cannery site was chosen, several alternatives were formulated that would provide protection for vessels. The varying basin sizes for the alternatives are based upon the estimated future fleet utilizing Craig Small Boat Harbor survey results and harbor use information from the City of Craig. The smaller alternatives were initially formulated to serve primarily the fleet of vessels demanding permanent moorage, while larger alternatives consider moorage for varying levels of transient vessels.

1. Additional Design Considerations

Craig residents raised concerns about a 2-foot swell that enters Klawock Inlet from the southwest. Based on this information, breakwater designs with a western opening should not be considered as they would not offer protection to this southwesterly swell and so were incomplete. Alternative 2 was eliminated from consideration and two modified alternatives based on the basin size of Alternative 2 were developed. These are discussed below as Alternatives 2a and 2b.

The medium and large basin sizes (Alternatives 3 and 4) were also eliminated from consideration based on the information regarding swell. In addition, Craig residents reported that the basin sizing for Alternatives 3 and 4 was problematic as it could interfere with local float plane traffic. Residents preferred the smaller basin sizes of Alternatives 1 and 2 which is why these general configurations were carried forward for detailed analysis.

The cost information for Alternatives 3 and 4 was still carried forward for the economic analysis. The purpose of analyzing these alternatives is to illustrate the justification of the NED plan – that is, to show the net benefits of a basin size larger than Alternative 2. The costs of alternatives with basin sizes similar to Alternatives 3 and 4 which are designed to consider the swell would be higher than the costs of the existing alternatives.

B. Alternatives Considered

The following sections describe each alternative and the costs. Costs are at 2014 price levels. Construction cost estimates include mob and demob, local service facilities (both upland facilities and harbor floats), general navigation features, navigation aids, and anodes. Costs for Operations, Maintenance, Repair, Replacement, and Rehabilitation are included and described for each alternative. Annual costs are based on the Federal Fiscal Year 2015 discount rate of 3.375 percent and a 50-year project period of analysis.

1. Alternative 1

Alternative 1 provides a protected basin for 105 slips for vessels if configured as currently designed. Alternative 1 includes design features to accommodate fish passage near shore. The approximate costs for fish passage are included in the construction cost.

The estimated construction cost including interest during construction, preliminary engineering and design, real estate, construction supervision and administration, and contingency is $33.75 million. OMRR&R for this alternative includes 5 percent of armor stone at 25 year intervals, complete anode replacement at 15 year intervals, and float replacement at 40 year intervals. OMRR&R costs for Alternative 1 are estimated at a present value of $1.4 million, or $60,000 annually. The average annual cost for Alternative 1 is $1.47 million.

2. Alternative 2

Alternative 2 would consist of a 10.1-acre basin protected by a 650-foot long western breakwater in a north-south alignment and an 850-foot long northern breakwater in an east-west alignment. There would be an opening to the west allowing for vessel ingress and egress to both the east and west. This alternative would provide 145 slips for vessels if configured as designed.

The estimated construction cost including interest during construction, preliminary engineering and design, real estate costs, construction supervision and administration, and contingency is $31.5 million. Operations, maintenance, repair, replacement, and rehabilitation (OMRR&R) for this alternative includes 5 percent of armor stone at 25 year intervals, complete anode replacement at 15 year intervals, and float replacement at 40 year intervals. OMRR&R costs for Alternative 2 are estimated at a present value of $1.762 million, or $73,000 annually. The average annual cost for Alternative 2 is $1.40 million.

3. Alternative 2a

Alternative 2a would consist of a 10.1-acre basin protected by a 960-foot long western breakwater in a general north-south alignment and a 960-foot long northern breakwater in a general east-west alignment. The western breakwater was modified to allow for vessel ingress and egress from the northwest while simultaneously addressing concerns about a southwesterly swell entering the harbor. This alternative would provide 145 slips for vessels if configured as currently designed. Additional design features were added to accommodate fish passage near shore. The approximate costs for fish passage are included in the construction cost.

The estimated construction cost including interest during construction, preliminary engineering and design, real estate costs, construction supervision and administration, and contingency is $42.32 million. Operations, maintenance, repair, replacement, and rehabilitation (OMRR&R) for this alternative includes 5 percent of armor stone at 25 year intervals, complete anode replacement at 15 year intervals, and float replacement at 40 year

intervals. OMRR&R costs for Alternative 2a are estimated at a present value of $2.28 million, or $95,000 annually. The average annual cost for Alternative 2a is $1.86 million.

4. Alternative 2b

This alternative would consist of a 10.1-acre basin protected by a 1,933-foot long breakwater configured in an L-shape. This design eliminates the western opening completely, providing protection against waves from all westerly and northerly directions. This basin would provide 145 slips for vessels if configured as currently designed. Additional design features were added to accommodate fish passage near shore. The approximate costs for fish passage are included in the construction cost.

The estimated construction cost including interest during construction, preliminary engineering and design, real estate costs, construction supervision and administration, and contingency is $36.28 million. Operations, maintenance, repair, replacement, and rehabilitation (OMRR&R) for this alternative includes 5 percent of armor stone at 25 year intervals, complete anode replacement at 15 year intervals, and float replacement at 40 year intervals. OMRR&R costs for Alternative 2b are estimated at a present value of $1.4 million, or $60,000 annually. The average annual cost for Alternative 2b is $1.58 million.

5. Alternative 3

Alternative 3 would consist of a 25.1-acre basin protected by a 650-foot long western breakwater in a north-south alignment and a 1,450-foot long breakwater in an east-west alignment. This basin would provide 303 slips for vessels if configured as designed.

The estimated construction cost including interest during construction, preliminary engineering and design, real estate costs, construction supervision and administration, and contingency is $51.8 million. Operations, maintenance, repair, replacement, and rehabilitation (OMRR&R) for this alternative includes 5 percent of armor stone at 25 year intervals, complete anode replacement at 15 year intervals, and float replacement at 40 year intervals. OMRR&R costs for Alternative 3 are estimated at a present value of $2.44 million, or $101,700 annually. The average annual cost for Alternative 3 is $2.26 million.

6. Alternative 4

This alternative would consist of a 42.5-acre basin protected by a 650-foot long western breakwater in a north-south alignment and a 1,600-foot long breakwater in an east-west alignment. This basin would provide 530 slips for vessels if configured as currently designed.

The estimated construction cost including interest during construction, preliminary engineering and design, real estate costs, construction supervision and administration, and contingency is $58.05 million. Operations, maintenance, repair, replacement, and rehabilitation (OMRR&R) for this alternative includes 5 percent of armor stone at 25 year intervals, complete anode replacement at 15 year intervals, and float replacement at 40 year intervals. OMRR&R costs for Alternative 4 are estimated at a present value of $3.63 million, or $151,000 annually. The average annual cost for Alternative 4 is $2.57 million.

C. Total Project Costs

Table B-73 presents a summary of the costs for each alternative.

Table B-73. Total Project Costs, by Alternative

Alternative	First Cost	Interest During Construction	PV OMRR&R	Total PV Project Costs	Average Annual Cost
1	$32,639,000	$1,107,000	$1,444,000	$35,190,000	$1,467,000
2*	$30,494,000	$1,035,000	$1,762,000	$33,291,000	$1,387,000
2a	$40,935,000	$1,388,000	$2,280,000	$44,603,000	$1,859,000
2b	$35,087,000	$1,190,000	$1,447,000	$37,724,000	$1,572,000
3*	$50,121,000	$1,701,000	$2,441,000	$54,263,000	$2,262,000
4*	$56,141,000	$1,905,000	$3,625,000	$61,672,000	$2,570,000

Notes:

- All costs rounded to the nearest thousand.
- Project costs assume a 2-year (24-month) construction window with construction beginning in 2015 and completed in 2017.
- Present value and average annual costs are calculated utilizing a 50-year project period of analysis and a Federal fiscal year 2015 discount rate of 3.375 percent.
- Operations, Maintenance, Repair, Replacement, and Rehabilitation (OMRR&R) costs include armor rock (5% of initial quantity) at 25 year intervals, complete anode replacement at 15 year intervals, and float replacement at 40 year intervals.
- Alternative 2 has been eliminated from further consideration due to issues associated with swell at the proposed harbor site.
- Alternatives 3 and 4 as presented in this table have been eliminated from further consideration due to issues associated with swell, basin size, and interference with sea plane operations. However, these alternatives are carried forward for comparison purposes only to serve to identify the NED plan.

VII. FUTURE WITH PROJECT CONDITIONS

This section provides an analysis of the costs incurred by harbor users in the various future with-project (FWP) conditions. These are the costs which accrue over the 50-year period of analysis with the various Federal projects in place. The same categories for which costs were quantified in the FWOP are utilized in this section.

A. Assumptions

In general, the same assumptions utilized in the FWOP condition section still apply here. Key assumptions and any differences will be noted in the appropriate sections.

There is no change in the vessel fleet expected to call upon Craig in the FWP conditions.

1. Future With Project Excess Moorage Demand and Costs by Alternative

In the FWOP condition, the level of costs and damages to boaters is calculated based on applying survey results to the expected population of Craig Harbor users. This analysis assumes that the inefficiencies in the FWOP are based upon the current level of overcrowding and congestion at Craig small boat harbor facilities. In this case, the overcrowding and congestion at Craig which cause these issues are represented quantitatively as excess moorage demand. Therefore, a relationship exists between the excess moorage demand and the level of expected damages in the FWOP. This analysis assumes that FWP costs for each alternative will be based on the level to which moorage demand is addressed.

a. Future Without Project Excess Moorage Demand

The excess moorage demand in the FWOP condition was calculated as a low and high scenario. The low scenario utilized primarily data from the City of Craig and estimated only the demand for permanent slips. This demand is summarized in Table B-74.

Table B-74. Craig Harbor FWOP excess moorage demand, Low scenario

Vessel Length	0-20'	21-27'	28-36'	37-45'	46-60'	>60'	Total
Number vessels on waitlist[1]	6	20	25	15	10	2	**78**
Vessels in stalls too small for their vessel[2]	0	3	17	13	22	0	**55**
Number of new vessels from survey responses[3]	0	0	8	13	16	0	**37**
Total	**6**	**23**	**50**	**41**	**48**	**2**	**170**

Notes:

1. Source: Craig harbor waitlist as of July 25, 2013.
2. Source: Craig harbor slip list as of July 25, 2013. Vessels greater than 3-feet longer than current stall length.
3. Vessels not from Craig which indicated on survey responses that they would use Craig Harbor. This includes extrapolation of survey sample results to the population vessel owners and permit holders.

The high scenario excess moorage demand considered both permanent and transient usage, and was based on the expected moorage demand from survey results minus current harbor use. Table B-75 summarizes this moorage demand.

Table B-75. Craig Harbor FWOP excess moorage demand, High scenario

Vessel Length	0-20'	21-27'	28-36'	37-45'	46-60'	>60'	Total
Permanent moorage	-5	24	21	29	21	3	**93**
Transient moorage	7	7	47	93	198	33	**385**
Total	**2**	**31**	**68**	**122**	**219**	**36**	**478**
Note: Negative numbers indicate a surplus of moorage (supply greater than demand).							
Permanent moorage is the estimated moorage demand from Craig survey results, minus the number of permanent boats already using the harbor, minus the number of open slips.							
Transient moorage is the estimated transient demand from Craig survey results and harbormaster data, minus the number of transient slips reported by the harbormaster.							

The nature of transient harbor use suggests that these boaters will come and go as needed for their operations, and their durations of stay at Craig will be varied. It is unlikely that all 385 transient vessels will utilize harbor facilities at the same time. There is no data available regarding the exact harbor entrances and exits for transient boaters. In order to address the uncertainty for these transient vessels, this analysis assumes that the largest fleet of transient vessels which will ever need to be at Craig harbors at any one time is equal to the commercial fishing vessel fleet. This revised transient fleet estimate is shown in Table B-76.

Table B-76. Revised Craig Harbor FWOP excess moorage demand, High scenario, transient vessels only

Vessel Length	0-20'	21-27'	28-36'	37-45'	46-60'	>60'	Total
Transient moorage	4	4	28	55	116	19	**226**

b. Future With Project Conditions Slip Availability

Costs to vessel owners in the future with project condition are based upon the level to which excess moorage demand is addressed. This is dependent upon the slips provided in each harbor configuration. Slip configurations are a local service facility, so the local sponsor has ultimate control over slip sizes and placement in new harbor facilities. However, the alternative plans are designed as complete projects including slip configurations and costs. The slip configurations were designed to optimize the number of vessels accommodated at Craig.

Table B-77 shows the expected slip configurations by alternative.

Table B-77. Slip Configurations, by Alternative (moorage supply)

Slip Length	20'	28'	36'	46'	60'	75'	120'	Total
Alternative 1	12	20	30	18	24		1	**105**
Alternative 2	12	28	38	30	36		1	**145**
Alternative 2a	12	28	38	30	36		1	**145**
Alternative 2b	12	28	38	30	36		1	**145**
Alternative 3	8	0	72	73	142	7	1	**303**
Alternative 4	10	29	101	132	245	12	1	**530**
Source: USACE Alaska District H&H Section.								

The low estimate of excess moorage demand includes vessels which use existing facilities at Craig, but are in slips which are too small for their vessels. In the low scenario, this analysis assumes that these vessels will be accommodated at new facilities first, which will result in available slips at old facilities as they are vacated by the larger vessels. Table B-78 presents the revised slip availability at the new Craig small boat harbor when considering the shift of vessels from existing harbors.

Table B-78. Revised slip availability at Craig

Slip Length	20'	28'	36'	46'	60'	75'	120'	Total
Alternative 1	13	28	25	24	14	0	1	**105**
Alternative 2	13	36	33	36	26	0	1	**145**
Alternative 2a	13	36	33	36	26	0	1	**145**
Alternative 2b	13	36	33	36	26	0	1	**145**
Alternative 3	9	8	67	79	132	7	1	**303**
Alternative 4	11	37	96	138	235	12	1	**530**

c. Total Moorage at Craig

The total amount of moorage available at Craig in the future with project condition is equal to the number of slips already available at North and South Cove, plus the new slips which will be added for each alternative plan. Table B-79 summarizes these calculations.

Table B-79. Total Moorage Availability at Craig

Slip Length	20'	28'	36'	46'	60'	75'	120'	Total
Alternative 1	47	82	53	88	49	0	4	**323**
Alternative 2	47	90	61	100	61	0	4	**363**
Alternative 2a	47	90	61	100	61	0	4	**363**
Alternative 2b	47	90	61	100	61	0	4	**363**
Alternative 3	43	62	95	143	167	7	4	**521**
Alternative 4	45	91	124	202	270	12	4	**748**

d. Moorage Demand met by alternative

Future without and future with project moorage demand at Craig is based upon extrapolating results of the Craig Small Boat Harbor survey. Table B-80 summarizes Craig moorage demand by moorage type.

Table B-80. Craig moorage demand by moorage type

Description	0-20	21-27	28-36	37-45	46-60	>60	Total
Permanent	19	61	54	72	49	3	258
Transient	22	18	61	102	207	34	444
Boat Launch	21	6	0	0	0	0	28
Total	**62**	**86**	**115**	**173**	**256**	**37**	**730**

Considering this moorage demand with the number of slips provided in each alternative plan allows a determination to be made regarding how each alternative addresses moorage demand. Then, future with project operating costs can be determined for each alternative.

This analysis assumes that vessels demanding permanent moorage will fill available slips first. Table B-81 shows the remaining available slips after accommodating vessels demanding permanent moorage. Since there are remaining available slips for all alternatives, permanent moorage demand has been met for all alternatives.

Table B-81. Available slips after accommodating permanent moorage

Alternative	Number of slips remaining after accommodating permanent vessels
Alternative 1	65
Alternative 2	105
Alternative 2a	105
Alternative 2b	105
Alternative 3	263
Alternative 4	490

The values in Table B-81 represent the slips available to meet transient moorage demand. Vessels demanding transient moorage do not need a full-time permanent slip. So this analysis assumes that each available slip can accommodate two transient vessels. The 105 remaining slips in Alternatives 2, 2a, and 2b can accommodate 210 transient vessels. This assumption addresses the limited information available regarding how often transient vessels need to utilize moorage at Craig.

Table B-82 presents the level of transient moorage demand met, considering these assumptions.

Table B-82. Transient moorage demand met, by alternative

Alternative	Percent of transient demand met
Alternative 1	29%
Alternative 2	47%
Alternative 2a	47%
Alternative 2b	47%
Alternative 3	100%
Alternative 4	100%

According to moorage demand estimates, there are 28 vessels which demand only use of the boat launch at Craig. There are boat launch ramp facilities at the existing small boat harbors, but a boat launch is not part of the harbor plans for the Wards Cove site. Given the low level of moorage demand for boat launch users, this analysis assumes that the demand for boat launch facilities is met for all alternatives. The basis for this assumption is that alleviating overcrowding at existing harbors will alleviate any issues currently experienced by boat launch users.

B. Vessel Damages

Some of the vessel damages reported by Craig survey respondents will not be alleviated with Federal navigation improvements. Examples of these types of damages as reported on surveys include: seat stolen, missing buoys, electrolysis, broken glass, missing mooring lines, and frozen water lines. There is an average of 1.8 of these types of vessel damages per year with an average repair cost of $146 each (updated to 2014 dollars).

The method to quantify these vessel damages is essentially the same as used to estimate FWOP damages. First the population of vessels which could be damaged is the total vessel fleet which would use moorage at Craig: 730 vessels. In the FWOP condition, this analysis assumed that an average of 5.6 vessel damages per year was equivalent to 11.6 percent of vessels subject to damage. Using that same proportional assumption, an average of 1.8 vessel damages per year equates to an annual damage rate of 3.73 percent. Applying this percent to the population of vessels subject to damages means that there will be an average of 27 vessels damaged per year (730 vessels * 3.73 percent). These vessel damages are split by vessel moorage type, as shown in Table B-83.

Table B-83. Future With Project, Vessels experiencing unavoidable damages

Moorage Types	Percent of moorage demand	Number of vessels damaged
Permanent	35%	10
Transient	61%	16
Boat Launch	4%	1
Total		**27**

According to the results of the Craig Small Boat Harbor survey, the average repair cost for these unavoidable damages is $146 (updated to 2014 dollars). Costs per damage range from $104 to $224. To maintain consistency with the future without project vessel damage calculations, and to address uncertainty in vessel damage costs, this analysis utilizes an @Risk triangular distribution with the minimum, average, and maximum damage costs as parameters. Figure B-24 shows the distribution of costs per vessel damage.

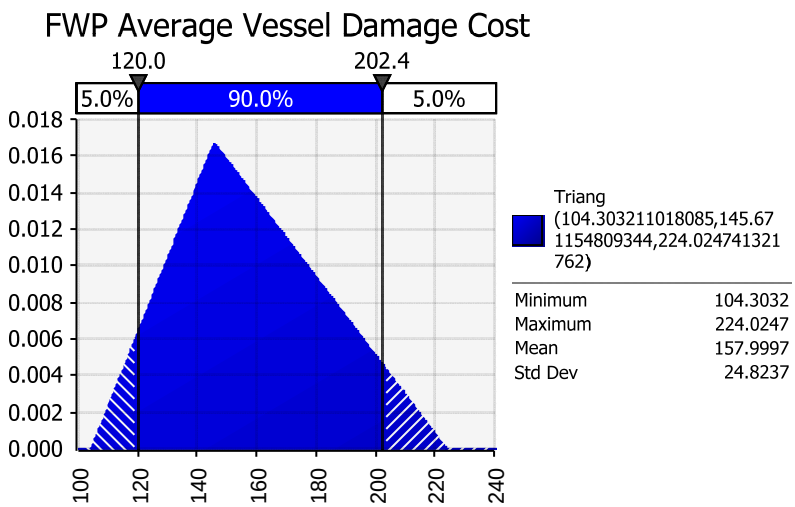


Figure B-24. Future With Project Condition Average Cost per unavoidable vessel damage, @Risk distribution

The annual cost of these unavoidable vessel damages in the future with project condition is equal to the number of vessels damages multiplied by the expected cost per damage, or 27 vessels multiplied by the damage cost distribution provided above. To utilize the average damage cost distribution in calculations, this analysis uses and @Risk simulation with 1,000 iterations. Figure B-25 shows the results of this simulation with annual vessel damage costs

ranging from a minimum of $2,871 to a maximum of $6,014 with a mean of $4,266. This analysis utilizes the mean value for further calculations.

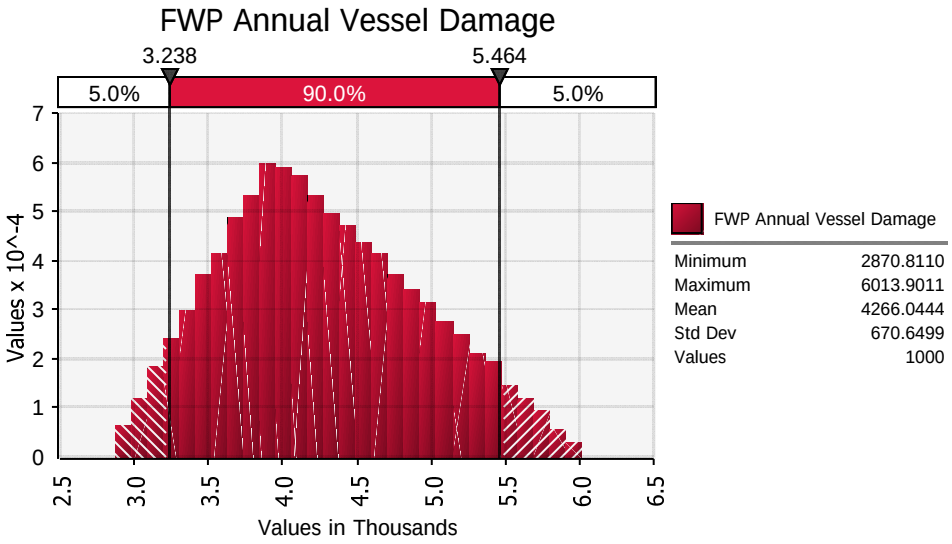


Figure B-25. Future With Project Annual Unavoidable Vessel Damage Costs, @Risk simulation results

These vessel damage costs are then calculated by moorage type, see Table B-84.

Table B-84. Future With Project Unavoidable vessel damages, by moorage type

		Future With Project (unavoidable)	
Moorage Types	**Percent of moorage demand**	**Number of vessels damaged**	**Annual damage cost**
Permanent	35%	10	$1,510
Transient	61%	16	$2,594
Boat Launch	4%	1	$162
Total		**27**	**$4,266**

In addition, this analysis utilizes the assumptions described in the preceding sections to determine how much of the FWOP damages will still accrue with a project. The amount of moorage demand met is related to the amount of damages alleviated. As previously described, all of the alternatives meet the demand for permanent moorage, so the only remaining vessel damage costs are those that are unavoidable with navigation improvements, as shown in Table B-85.

Table B-85. Permanent moorage demand met and remaining vessel damage costs

Scenario	Permanent moorage	
	Demand Met	FWP Damage Costs
Alt. 1	100%	$1,510
Alt. 2	100%	$1,510
Alt. 2a	100%	$1,510
Alt. 2b	100%	$1,510
Alt. 3	100%	$1,510
Alt. 4	100%	$1,510

Similarly, the amount of remaining transient moorage demand (equal to one minus the amount of demand met) is equal to the remaining vessel damage costs, as shown in Table B-86.

Table B-86. Transient moorage demand met and remaining damage costs

Scenario	Transient moorage	
	Demand Met	FWP Damage Costs
Alt. 1	29%	$85,474
Alt. 2	47%	$64,402
Alt. 2a	47%	$64,402
Alt. 2b	47%	$64,402
Alt. 3	100%	$2,594
Alt. 4	100%	$2,594

And finally, this analysis assumes that all boat launch moorage demand is met, so the remaining vessel damage costs are equal to those that are unavoidable. See Table B-87.

Table B-87. Boat Launch moorage demand met and remaining damage costs

Scenario	Boat Launch	
	Demand Met	FWP Damage Costs
Alt. 1	100%	$162
Alt. 2	100%	$162
Alt. 2a	100%	$162
Alt. 2b	100%	$162
Alt. 3	100%	$162
Alt. 4	100%	$162

Total annual future with project vessel damages are equal to the sum of permanent, transient, and boat launch, as show in Table B-88.

Table B-88. Total Annual Future With-Project Vessel Damage Costs, by alternative

Alternative	Total Annual FWP Damage Cost
Alt. 1	$87,146
Alt. 2	$66,074
Alt. 2a	$66,074
Alt. 2b	$66,074
Alt. 3	$4,266
Alt. 4	$4,266

Table B-89 presents the net present value and average annual future with-project vessel damage costs for each alternative.

Table B-89. Future With-Project Vessel Damage Costs, by Alternative

Category:	Future With Project Costs	
Vessel Damages	Net Present Value	Average Annual
Alt. 1	$2,091,000	$87,000
Alt. 2	$1,585,000	$66,000
Alt. 2a	$1,585,000	$66,000
Alt. 2b	$1,585,000	$66,000
Alt. 3	$102,000	$4,000
Alt. 4	$102,000	$4,000

Note: Values are rounded to the nearest thousand.

C. Vessel Delays

Similar to vessel damages, there are some vessel delays reported on survey results which will not be affected by navigation improvements. Table B-90 summarizes the expected effects of navigation improvements on each of the vessel delay categories.

Table B-90. Vessel Delay categories and expected effect of navigation improvements

Vessel Delay Categories (from survey)	Delay alleviated with navigation improvements?	Remaining Delay cost in FWP condition
Wait for tide change	Somewhat	50%
Another boat had to be moved from my stall	Yes	0%
Harbor staff not available	No	100%
Had to wait for rafted boat owner to return	Yes	0%
Launching delays at ramp	No	100%
Other (congestion & overcrowding)	Yes	0%
Other (ice in harbor)	No	100%

Note: The total remaining delay cost for each alternative will be dependent upon the level of overcrowding alleviated. This table shows the best case scenario for reducing vessel delays.

The assumptions related to each of the delay categories are as follows:

- Wait for tide change – some vessels at Craig have to wait for tide changes when entering or leaving existing small boat harbor facilities due to draft restrictions. The new harbor site is naturally deep and vessels will not face these issues. This analysis conservatively assumes that half of the delays associated with tidal issues will be alleviated as some vessels which are depth-constrained will utilize new harbor facilities, while some will continue current practices.
- Another boat had to be moved from my stall – these delays are directly related to current overcrowding issues and can be alleviated with navigation improvements.
- Harbor staff not available – Federal navigation improvements will have no effect on the level of local harbor staffing. These delays will not be alleviated with navigation improvements.
- Had to wait for rafted boat owner to return – these delays are directly related to current overcrowding. With navigation improvements, rafting activities will be reduced and these delays can be eliminated.
- Launching delays at ramp – the current harbor designs do not include boat launch ramp facilities; therefore, these delays will not be affected by new navigation improvements.
- Other (congestion and overcrowding) – these responses were written in by survey respondents and were all related to congestion and overcrowding issues. These are the types of issues which are expected to be resolved by navigation improvements.
- Other (ice in harbor) – Federal navigation improvements will not address issues with ice in current harbor facilities. Delays associated with ice in the harbor will not be changed in the future with project condition scenarios.

Table B-91 summarizes the total delay hours which will not be alleviated by navigation improvements.

Table B-91. Total Future With-Project Delay Hours, only delays which will occur regardless of navigation improvements

Description	0-20'	21-27'	28-36'	37-45'	46-60'	>60'	Total
Commercial Fishing Vessels							
Permanent	10.70	75.80	119.49	320.57	238.98	0.00	765.54
Transient	0.00	0.00	19.05	38.21	90.67	7.40	155.34
Boat Launch	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Comm Fish Vessel Delays	10.70	75.80	138.55	358.78	329.65	7.40	920.88
Charter Vessels							
Permanent	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Transient	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Boat Launch	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Charter Vessel Delays	0.00	0.00	0.00	0.00	0.00	0.00	-
Subsistence Vessels							
Permanent	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Transient	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Boat Launch	8.07	0.00	0.00	0.00	0.00	0.00	8.07
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Subsistence Vessel Delays	8.07	0.00	0.00	0.00	0.00	0.00	8.07

The cost of these delays is calculated in the same manner as in the FWOP condition: utilizing a combination of vessel operating costs and opportunity cost of time. Table B-92 summarizes these calculations.

Table B-92. Cost of Future With-Project Vessel Delays, only delays which will occur regardless of navigation improvements

Cost of Delays (Vessel Operating Costs and OCT), Future With-Project Condition							
Total Delay Costs	**0-20 ft**	**21-27 ft**	**28-36 ft**	**37-45 ft**	**46-60 ft**	**>60 ft**	**Total**
Permanent	$2,185	$15,467	$33,901	$132,319	$102,425	$0	$286,297
Transient	$0	$0	$5,406	$15,771	$38,862	$3,522	$63,561
Boat Launch	$1,647	$0	$0	$0	$0	$0	$1,647
Other	$0	$0	$0	$0	$0	$0	$0
Total	**$3,832**	**$15,467**	**$39,307**	**$148,090**	**$141,287**	**$3,522**	**$351,505**

The total cost of vessel delays in the FWP condition is dependent upon the level of remaining excess moorage demand in each scenario. The same methodology as used in vessel damages is used here to calculate remaining vessel delay costs. First, all alternatives meet the demand

for permanent moorage, so the only remaining delay costs are those that would not be alleviated. See Table B-93.

Table B-93. Permanent Moorage Demand met and Future With-Project delay costs

Scenario	Permanent Moorage	
	Demand Met	FWP Delay Cost
Alt. 1	100%	$286,297
Alt. 2	100%	$286,297
Alt. 2a	100%	$286,297
Alt. 2b	100%	$286,297
Alt. 3	100%	$286,297
Alt. 4	100%	$286,297

The amount of remaining transient moorage demand is related to the level of remaining vessel delay costs. See Table B-94.

Table B-94. Transient Moorage Demand met and Future With-Project delay costs

Scenario	Transient Moorage	
	Demand Met	FWP Delay Cost
Alt. 1	29%	$396,865
Alt. 2	47%	$312,120
Alt. 2a	47%	$312,120
Alt. 2b	47%	$312,120
Alt. 3	100%	$63,561
Alt. 4	100%	$63,561

Finally, all alternatives meet the demand for boat launch use at Craig, so only unavoidable delays remain for these vessels in the future with project condition. See Table B-95.

Table B-95. Boat Launch Moorage Demand met and Future With-Project delay costs

Scenario	Boat launch	
	Demand Met	FWP Delay Cost
Alt. 1	100%	$1,647
Alt. 2	100%	$1,647
Alt. 2a	100%	$1,647
Alt. 2b	100%	$1,647
Alt. 3	100%	$1,647
Alt. 4	100%	$1,647

The total future with project vessel delay costs are equal to the sum of permanent, transient, and boat launch delay costs, as shown in Table B-96.

Table B-96. Total Future With-Project Vessel Delay Costs

Scenario	Total FWP Cost
Alt. 1	$684,809
Alt. 2	$600,064
Alt. 2a	$600,064
Alt. 2b	$600,064
Alt. 3	$351,505
Alt. 4	$351,505

Table B-97 presents the net present value and average annual future with project vessel damage costs for each alternative.

Table B-97. Future With-Project Vessel Delay Costs, by Alternative

Category:	Future With Project Costs	
Vessel Delays	Net Present Value	Average Annual
Alt. 1	$16,431,000	$685,000
Alt. 2	$14,398,000	$600,000
Alt. 2a	$14,398,000	$600,000
Alt. 2b	$14,398,000	$600,000
Alt. 3	$8,434,000	$352,000
Alt. 4	$8,434,000	$352,000

Note: Values are rounded to the nearest thousand.

D. Subsistence

In the future with project condition, Craig residents are expected to harvest additional subsistence resources, resulting in an increase in the equivalent value of those harvests. These harvest increases are based upon increased access to vessels and reduced overcrowding and congestion at harbor facilities.

To estimate the possible harvest levels in the FWP condition, this analysis examines subsistence harvests of nearby communities. In order to determine which communities are appropriate for comparison, this analysis examines the demographic characteristics and marine facilities of other communities on Prince of Wales Island, as shown in Table B-98.

Table B-98. Population and Marine Facilities of Prince of Wales Island Communities

Communities on Prince of Wales Island:[1]	Population, 2000[2]	Population, 2010[3]	Rank by 2010 population	Marine Facilities[4]
Craig	1,397	1,201	1	SBH - North Cove and South Cove, Dock
Coffman Cove	199	176	5	Float
Edna Bay	49	42	10	Refuge Float
Hollis	139	112	7	Float
Hydaburg	382	376	4	SBH
Kasaan	39	49	8	Float & Floating breakwater
Klawock	854	755	2	SBH & Dock
Naukati Bay	135	113	6	None
Point Baker	35	15	12	Float
Port Protection	63	48	9	Refuge Float
Thorne Bay	557	471	3	SBH
Whale Pass	58	31	11	Seaplane float

Notes & Data Sources:

1. Per 2010 Census data, these are all of the cities and Census Designated Places on Prince of Wales Island.
2. 2000 US Census population data, accessed through demographic profiles at the State of Alaska Department of Labor and Workforce Development.
3. 2010 US Census population data, accessed through demographic profiles at the State of Alaska Department of Labor and Workforce Development.
4. Source: "Public Port & Harbors in Alaska" map. January 2011, State of Alaska Department of Transportation and Public Facilities.

Craig is by far the largest community on Prince of Wales Island and has the most marine infrastructure. The demographic and infrastructure data for Prince of Wales Island do not immediately indicate a community against which to compare Craig. Prince of Wales Island communities are believed to be the most representative, rather than other communities in Southeast Alaska. This is due to their relatively isolated location, and that communities near Craig will all be harvesting the same subsistence resources (animal and plant species). The comparison of subsistence harvest data of these communities is shown in Table B-99.

Table B-99. Comparison of Subsistence Harvest Data, Prince of Wales Island Communities

Communities on Prince of Wales Island:	Year of Subsistence Harvest Data	Estimated Pounds Harvested, per year	Average Lbs Harvested per Household	Per Capita Lbs Harvested	Percent difference vs. Craig, per capita harvest
Craig	1997	406,934	669.30	230.66	
Coffman Cove	1997	58,818	784.24	276.14	19.72%
Edna Bay	1998	20,089	1,181.68	383.25	66.15%
Hollis	1998	26,271	445.27	169.28	-26.61%
Hydaburg	1997	154,874	1,182.25	384.11	66.53%
Kasaan	1998	19,758	1,097.67	451.98	95.95%
Klawock	1997	271,071	894.62	320.36	38.89%
Naukati Bay	1998	35,388	536.18	241.52	4.71%
Point Baker	1996	13,707	721.41	288.56	25.10%
Port Protection	1996	44,004	1,100.09	450.86	95.47%
Thorne Bay	1998	92,840	455.10	179.22	-22.30%
Whale Pass	1998	10,111	505.56	184.96	-19.81%

Notes & Data Sources:
All subsistence harvest information gathered from the State of Alaska Department of Fish and Game, Community Subsistence Information System. This most recent data available is presented here.

Given the lack of a single community against which to compare Craig, this analysis examines the harvest levels of all other Prince of Wales Island communities. The average per capita subsistence harvest for Prince of Wales Island, not including Craig, is 302.75 pounds, or a 31.25 percent increase compared to Craig. This analysis expects that the level of subsistence harvest increase related to navigation improvements will be less than or equal to 31.25 percent. To address the uncertainty associated with selecting this value, this analysis utilizes an @Risk uniform distribution using 0 and 31.25 percent as parameters, as shown in Figure B-26.

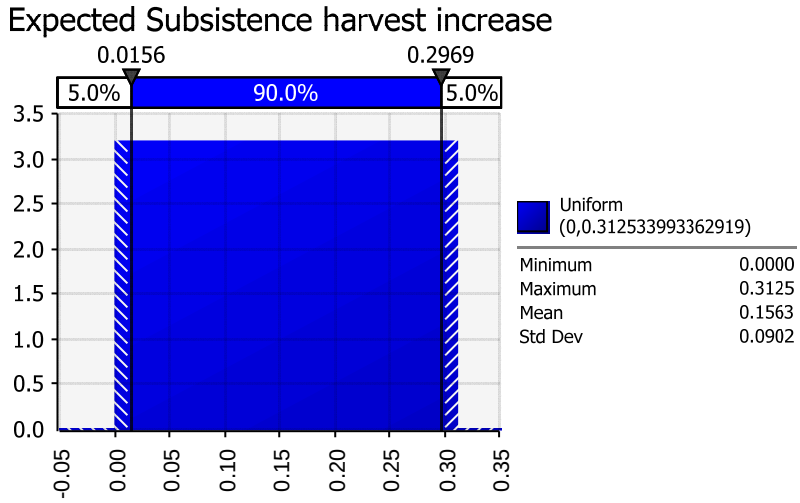


Figure B-26. Subsistence harvest increase, @Risk distribution

An @Risk simulation with 1,000 iterations was conducted to utilize this distribution of expected subsistence harvest increase, with results shown in Figure B-27. This analysis uses the mean value of 15.6 percent increase. This represents the maximum expected subsistence harvest increase, assuming all overcrowding at Craig is alleviated. The harvest increase will be evaluated for each alternative based on the level of moorage demand met.

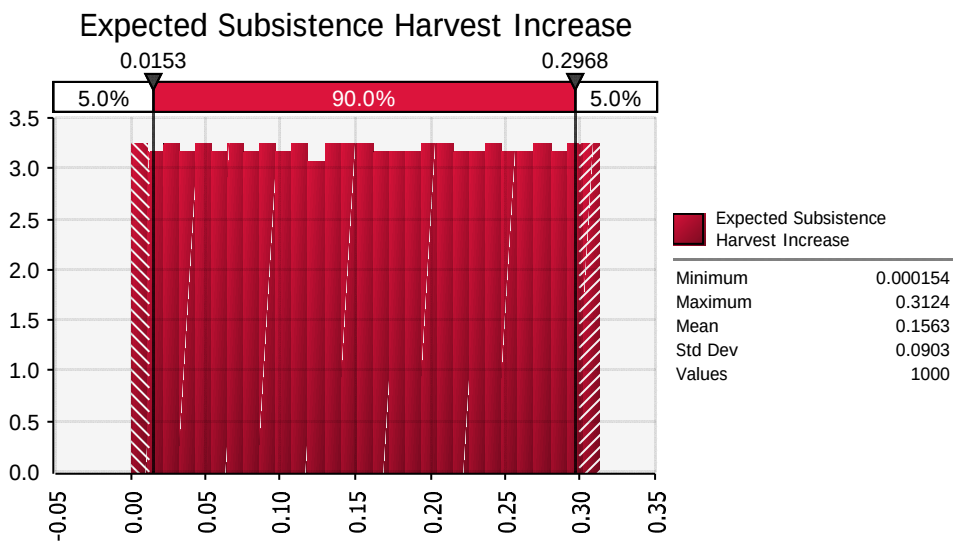


Figure B-27. Subsistence harvest increase, @Risk simulation results

The level of the expected harvest increase for each alternative is dependent upon the amount of moorage demand met. The Craig Small Boat Harbor survey found that all of the subsistence vessels demanding moorage at Craig were in the 36-feet or smaller size classes. This analysis utilizes the amount of moorage demand met for these classes of vessels to

determine the expected increase in harvest. Table B-100 summarizes the moorage demand met for these vessels.

Table B-100. Moorage Demand met by alternative, vessels 36 feet and less

Alternative	Amount of moorage demand met - vessels 36' and less		
	Permanent	Transient	Boat Launch
Alternative 1	100%	94%	100%
Alternative 2	100%	100%	100%
Alternative 2a	100%	100%	100%
Alternative 2b	100%	100%	100%
Alternative 3	100%	100%	100%
Alternative 4	100%	100%	100%

The future with project subsistence harvest amounts are equal to the expected future without project harvests multiplied by the expected harvest increase for each alternative. The population and distribution of moorage demand by type is expected to remain the same between the future without and future with project conditions. A summary of future with project harvest levels is presented in Table B-101.

Table B-101. Craig estimated future with-project subsistence harvest, by alternative, for selected harvest years

Year	Total FWP Harvest, lbs, All Moorage Types					
	Alt. 1	Alt. 2	Alt. 2a	Alt. 2b	Alt. 3	Alt. 4
2017	310,169	317,121	317,121	317,121	317,121	317,121
2027	304,167	310,985	310,985	310,985	310,985	310,985
2037	296,364	303,007	303,007	303,007	303,007	303,007
2047	289,867	296,365	296,365	296,365	296,365	296,365
2057	283,110	289,456	289,456	289,456	289,456	289,456
2066	277,163	283,376	283,376	283,376	283,376	283,376

Valuation of the future with project subsistence harvest utilizes the same replacement value as described in the future without project condition: $13.20 per pound. The total value of the subsistence harvest each year is equal to the total expected harvest multiplied by the replacement value per pound. Table B-102 summarizes these calculations for selected project years.

Table B-102. Future With-Project Subsistence Harvest Values, by alternative for selected project years

Year	FWP Harvest value					
	Alt. 1	Alt. 2	Alt. 2a	Alt. 2b	Alt. 3	Alt. 4
2017	$4,095,489	$4,187,291	$4,187,291	$4,187,291	$4,187,291	$4,187,291
2027	$4,016,236	$4,106,262	$4,106,262	$4,106,262	$4,106,262	$4,106,262
2037	$3,913,208	$4,000,924	$4,000,924	$4,000,924	$4,000,924	$4,000,924
2047	$3,827,431	$3,913,224	$3,913,224	$3,913,224	$3,913,224	$3,913,224
2057	$3,738,204	$3,821,998	$3,821,998	$3,821,998	$3,821,998	$3,821,998
2066	$3,659,680	$3,741,713	$3,741,713	$3,741,713	$3,741,713	$3,741,713

Table B-103 presents the net present value and average annual future with project subsistence harvest values for each alternative.

Table B-103. Future With-Project Value of Craig Subsistence Harvests, by alternative

Category:	Future With Project Costs	
Subsistence	Net Present Value	Average Annual
Alt. 1	$94,534,000	$3,940,000
Alt. 2	$96,653,000	$4,028,000
Alt. 2a	$96,653,000	$4,028,000
Alt. 2b	$96,653,000	$4,028,000
Alt. 3	$96,653,000	$4,028,000
Alt. 4	$96,653,000	$4,028,000

Note: Values are rounded to the nearest thousand.

E. Travel Costs

In the future with-project condition, the vessels which indicated that they would relocate to Craig would see reduced travel costs. For the FWOP condition, this analysis only quantified the vessel travel costs related to traveling to and from Craig each year. For commercial vessels (commercial fishing, subsistence, and charter), these trips likely occur at the beginning and end of each fishing season. Only these pre- and post-season trips were quantified due to lack of data regarding in-season vessel movements. It is likely that these vessels make more frequent trips between their current homeport and Craig.

The FWOP condition analysis split boaters which could relocate to Craig into two parts: part 1 are boaters without Craig home addresses, not currently homeported at Craig who indicated they would homeport there, and part 2 are boaters with Craig home addresses who reported that they are not currently homeported there. The FWOP condition analysis assumed that Part 1 boaters make a minimum of one trip every two years between Craig and their current homeport. Part 2 boaters are assumed to make 1 trip per year.

The FWOP condition only quantified the travel costs of vessel trips which will be affected by navigation improvements. Therefore, in the best case scenario FWP condition, in which all

excess moorage demand is met, all of these trips will be eliminated and vessel travel costs will be zero.

The boaters who indicated they will relocate to Craig all demand permanent moorage there. Since all of the alternatives meet the demand for permanent moorage, there will be no remaining vessel travel costs in the future with project condition. Table B-104 summarizes these calculations.

Table B-104. Annual FWP Vessel Travel Costs, by alternative

Scenario	Permanent moorage met	FWP Travel Costs
Alt. 1	100%	$0
Alt. 2	100%	$0
Alt. 2a	100%	$0
Alt. 2b	100%	$0
Alt. 3	100%	$0
Alt. 4	100%	$0

Table B-105 presents the net present value and average annual future with project vessel travel costs for each alternative.

Table B-105. Future With-Project Vessel Travel Costs, by alternative

Category:	Future With Project Costs	
Travel Cost	Net Present Value	Average Annual
Alt. 1	$0	$0
Alt. 2	$0	$0
Alt. 2a	$0	$0
Alt. 2b	$0	$0
Alt. 3	$0	$0
Alt. 4	$0	$0

F. Infrastructure Damage

Calculations of infrastructure damage costs for the FWP condition are the same as the FWOP condition. The primary difference in calculation is that this analysis assumes that FWP infrastructure repairs must be conducted at 40-year intervals. This is in comparison to 20-years in the FWOP condition. This assumption is based on input from the Craig harbormaster and Alaska District Engineering staff.

This analysis assumes that existing float infrastructure at both North Cove and South Cove will need to be replaced less frequently in the future with project condition. The basis for this assumption is that new moorage facilities at the new Wards Cove site will reduce the overcrowding currently faced at both North Cove and South Cove. Since overcrowding and congestion is causing increased wear-and-tear to existing facilities, reducing this

overcrowding will alleviate these types of damages. Also, some of the reduced life of floats at North Cove is due to the wave climate. The existing docks adjacent to the Wards Cove site are also subject to damages from wave action. The new breakwater proposed at the Wards Cove site is expected to reduce the wave climate for North Cove and for the existing docks adjacent to Wards Cove. This reduction in wave climate is also expected to alleviate damage to infrastructure and contribute to the decreased frequency of replacement.

The costs from Seldovia Harbor are again utilized as representative float replacement costs. The total float replacement costs for existing Craig facilities is approximately $12 million at each interval.

Table B-106 presents the net present value and average annual future with project infrastructure damage costs for each alternative.

Table B-106. Future With-Project Infrastructure Damage Costs, by alternative

Category:	Future With Project Costs	
Infrastructure Damage	Net Present Value	Average Annual
Alt. 1	$13,511,000	$563,000
Alt. 2	$13,511,000	$563,000
Alt. 2a	$13,511,000	$563,000
Alt. 2b	$13,511,000	$563,000
Alt. 3	$13,511,000	$563,000
Alt. 4	$13,511,000	$563,000

Note: Values are rounded to the nearest thousand.

This analysis assumes that infrastructure damage costs will be alleviated regardless of the selected alternative. The basis for this assumption is that infrastructure damage is due to both overcrowding issues and wave conditions. The new Wards Cove Harbor will address both of these issues, but not necessarily in a manner proportional to the amount of moorage demand met.

G. Recreational Opportunity – Unit Day Values

The future with project recreation experience is quantified using the same Unit Day Value (UDV) method as described in the future without project condition section. The difference is that the calculations in this section are based upon the expected with project UDV points assignment, as based on a focus group of Craig recreational boaters. Table B-107 presents the assigned point values for Craig in the future without- and future with-project condition.

Table B-107. Unit Day Values Without- and With-Project Conditions, Craig

Criteria	Point Range	Points Without Project	Points With Project	Rationale
Recreation Experience	0-30	8.2	15.3	Harbor weekend and holiday use is crowded with close proximity to fishing grounds and commercial fish processor in town. Moderate use during weekdays. Decision based on numerous factors such as high quality of the fishing experience and willingness of charter clients to pay from $190 to $275 for the opportunity to fish along with plane fare for out of town recreation users. Non-fishing recreation customers pay between $145 to $200 for the sightseeing and water taxi opportunities. Recreation destination will be enhanced with project.
Availability of Opportunity	0-18	11.7	9.2	No comparable opportunities within two-hours travel time, although recreational opportunities abound in Alaska.
Carrying Capacity	0-14	7.3	10.3	Adequate facility that currently accommodates multiple users. Prince of Wales Island and surrounding area fisheries are well managed but not overcrowded. Only limitations on carrying capacity might be in the form of reaching maximum commercial and sport fishing quotas.
Accessibility	0-18	9.2	15.3	Remote access, good roads on island within site although parking is an expressed concern. Assume with-project conditions will relieve overcrowded parking condition.
Environmental	0-20	12.2	15.2	Above average aesthetic quality; any limiting factors can be reasonably rectified. Limiting factor for aesthetic quality concerns the crowded conditions at the harbor and launch ramp. Additional aesthetic concerns are the visions of the clearcut areas on the island from the timber industry activity. Overcrowded conditions are significantly improved with project . Clearcut areas of the surrounding mountains will not be changed under with project conditions.
Total Points	**100**	**48.5**	**65.3**	

Source: USACE EGM 15-03, Unit Day Values for Recreation for Fiscal year 2015, and average of responses for Craig focus group, September 2014.

Table B-108 shows the conversion of assigned points to unit day values.

Table B-108. Points and Unit Day Values for Craig Harbor, Future Without- and Future With-Project Conditions

	Future Without Project		Future With Project	
Type of Recreation	Points	UDV	Points	UDV
Specialized Fishing & Hunting	49	$32.67	65	$36.99
Specialized Recreation other than Fishing & Hunting	49	$23.17	65	$28.57

Source: Points from Craig focus group responses, September 2014. UDVs from USACE EGM 15-03.

This analysis assumes that the recreational use of Craig small boat harbors does not change between the future without- and with-project conditions. The recreation days for sport fishermen, charter fishermen, and independent travelers as reported in the future without-project condition also apply here. This analysis assumes that there will be no new recreational boaters (those who did not participate in any recreation activity in the without-project condition) as a result of navigation improvements. This analysis only quantifies the expected increase in the recreational experience as a result of enhanced marine infrastructure. Table B-109 summarizes the expected recreational use at Craig.

Table B-109. Craig Recreational Visitation for selected project years

Year	Number of Visitor Days					
	Recreational Fishing		Charter Boats		Independent Travelers	
	Specialized Fishing	Specialized Sightseeing	Specialized Fishing	Specialized Sightseeing	Specialized Fishing	Specialized Sightseeing
2012	59,167	0	7,038	180	0	227
2017	59,093	0	7,029	180	0	227
2027	57,949	0	6,893	177	0	222
2037	56,463	0	6,716	172	0	217
2047	55,225	0	6,569	168	0	212
2057	53,938	0	6,416	165	0	207
2066	52,805	0	6,281	161	0	203

Table B-110 shows the future with project condition Unit Day Values for Craig for selected project years. These values are based on the input data as described in the previous sections.

Table B-110. Unit Day Values for Craig Small Boat Harbor Future With-Project Condition

Year	Future With-Project Condition Unit Day Values					
	Recreational Fishing		Charter Boats		Independent Travelers	
	Specialized Fishing	Specialized Sightseeing	Specialized Fishing	Specialized Sightseeing	Specialized Fishing	Specialized Sightseeing
2012	$2,188,279	$0	$260,294	$5,155	$0	$6,484
2017	$2,185,543	$0	$259,969	$5,148	$0	$6,476
2027	$2,143,250	$0	$254,938	$5,049	$0	$6,341
2037	$2,088,270	$0	$248,398	$4,919	$0	$6,188
2047	$2,042,495	$0	$242,953	$4,811	$0	$6,052
2057	$1,994,879	$0	$237,289	$4,699	$0	$5,911
2066	$1,952,975	$0	$232,305	$4,600	$0	$5,787

Unit Day Values for the future with project condition are only presented for one project scenario – rather than separate values for each alternative plan. Recreation benefits are based upon the overall expected change in the recreational experience and are also based on the expected population of recreational boaters at Craig. This analysis assumes that future with project recreation values (and benefits) will accrue at the same level regardless of the selected alternative.

Table B-111 presents the net present value and average annual future with-project recreation unit day values for each alternative.

Table B-111. Future With-Project Recreation Unit Day Values for each alternative

Category:	Future With Project Costs	
Recreation UDV	Net Present Value	Average Annual
Alt. 1	$56,717,000	$2,364,000
Alt. 2	$56,717,000	$2,364,000
Alt. 2a	$56,717,000	$2,364,000
Alt. 2b	$56,717,000	$2,364,000
Alt. 3	$56,717,000	$2,364,000
Alt. 4	$56,717,000	$2,364,000

Note: Values are rounded to the nearest thousand.

H. Recreational Delays – Opportunity Cost of Time

As with delays for commercial vessels, there are types of delays for recreational boats that will not be affected by navigation improvements. Table B-112 summarizes the expected effects of navigation improvements on vessel delays. These are the same assumptions used for commercial vessel delays.

Table B-112. Vessel Delay categories and expected effect of navigation improvements

Vessel Delay Categories (from survey)	Delay alleviated with navigation improvements?	Remaining Delays in FWP condition
Wait for tide change	Somewhat	50%
Another boat had to be moved from my stall	Yes	0%
Harbor staff not available	No	100%
Had to wait for rafted boat owner to return	Yes	0%
Launching delays at ramp	No	100%
Other (congestion & overcrowding)	Yes	0%
Other (ice in harbor)	No	100%

Utilizing these assumptions, Table B-113 presents the remaining delay hours in the future with-project condition.

Table B-113. Recreation Vessel Delay Hours, Future Without- and Future With-Project Condition

Vessel Delay Categories	FWOP delay hours	Remaining Delay hours in FWP condition
Wait for tide change	8	4
Another boat had to be moved from my stall	285.48	0
Harbor staff not available	1.5	2
Had to wait for rafted boat owner to return	1.5	0
Launching delays at ramp	2.5	3
Other (congestion & overcrowding)	0	0
Other (ice in harbor)	1	1
Total	**300**	**9**

The annual opportunity cost of time for these remaining recreation delays is equal to the delay hours multiplied by the hourly leisure rate of $4.48 per hour: equal to $40.

Table B-114 presents the net present value and average annual future with project recreation unit day values for each alternative. As this category is related to the recreational experience at Craig, this analysis assumes that future with project delays accrue at the same level for each alternative plan.

Table B-114. Future With-Project Recreation Delay Opportunity Cost of Time for each alternative

Category:	Future With Project Costs	
Recreation OCT	Net Present Value	Average Annual
Alt. 1	$1,000	$40
Alt. 2	$1,000	$40
Alt. 2a	$1,000	$40
Alt. 2b	$1,000	$40
Alt. 3	$1,000	$40
Alt. 4	$1,000	$40

Note: Net Present Values are rounded to the nearest thousand.

I. Summary of Future With-Project Conditions

Table B-115 summarizes the future with-project conditions at Craig.

Table B-115. Summary of Future With-Project Costs

Alternative Number	Net Present Value	Average Annual Value
1	$183,285,000	$7,639,000
2*	$182,865,000	$7,621,000
2a	$182,865,000	$7,621,000
2b	$182,865,000	$7,621,000
3*	$175,418,000	$7,311,000
4*	$175,418,000	$7,311,000

Notes:

- Values are rounded to the nearest thousand and may not sum from the previous tables due to rounding.
- Alternative 2 has been eliminated from consideration due to concerns regarding swell. Alternatives 3 and 4 as presented here have also been eliminated from consideration due to swell and local concerns regarding the basin size interfering with float plane operations. Alternatives 3 and 4 were retained for economic analysis to show that a smaller basin size represents the NED plan.

VIII. ANNUAL BENEFITS

This section serves to summarize the annual benefits, by category and by alternative. Annual benefits determined by comparing costs to harbor users in the future without and future with project conditions.

An important note is that all values presented in this section have been rounded to the nearest thousand and therefore may not exactly equal to values presented in the previous sections.

A. Benefits by category

This section summarizes the average annual future without project condition costs, future with project condition costs, and benefits by benefit category.

1. Vessel Damages

Table B-116. Vessel Damages, Average Annual Values

Scenario	Average Annual Values		
	FWOP	FWP	Benefit
FWOP	$192,000		
Alt. 1		$87,000	$105,000
Alt. 2		$66,000	$126,000
Alt. 2a		$66,000	$126,000
Alt. 2b		$66,000	$126,000
Alt. 3		$4,000	$188,000
Alt. 4		$4,000	$188,000

2. Vessel Delays

Table B-117. Vessel Delays, Average Annual Values

Scenario	Average Annual Values		
	FWOP	FWP	Benefit
FWOP	$1,395,000		
Alt. 1		$685,000	$711,000
Alt. 2		$600,000	$795,000
Alt. 2a		$600,000	$795,000
Alt. 2b		$600,000	$795,000
Alt. 3		$352,000	$1,044,000
Alt. 4		$352,000	$1,044,000

3. Subsistence

Table B-118. Subsistence, Average Annual Values

Scenario	Average Annual Values		
	FWOP	FWP	Benefit
FWOP	$3,484,000		
Alt. 1		$3,940,000	$456,000
Alt. 2		$4,028,000	$544,000
Alt. 2a		$4,028,000	$544,000
Alt. 2b		$4,028,000	$544,000
Alt. 3		$4,028,000	$544,000
Alt. 4		$4,028,000	$544,000

4. Travel Costs

Table B-119. Travel Costs, Average Annual Values

Scenario	Average Annual Values		
	FWOP	FWP	Benefit
FWOP	$589,000		
Alt. 1		$0	$589,000
Alt. 2		$0	$589,000
Alt. 2a		$0	$589,000
Alt. 2b		$0	$589,000
Alt. 3		$0	$589,000
Alt. 4		$0	$589,000

5. Infrastructure Damage

Table B-120. Infrastructure Damage, Average Annual Values

Scenario	Average Annual Values		
	FWOP	FWP	Benefit
FWOP	$792,000		
Alt. 1		$563,000	$229,000
Alt. 2		$563,000	$229,000
Alt. 2a		$563,000	$229,000
Alt. 2b		$563,000	$229,000
Alt. 3		$563,000	$229,000
Alt. 4		$563,000	$229,000

6. Recreation – Unit Day Values

Table B-121. Recreation UDV, Average Annual Values

Scenario	Average Annual Values		
	FWOP	FWP	Benefit
FWOP	$2,087,000		
Alt. 1		$2,364,000	$277,000
Alt. 2		$2,364,000	$277,000
Alt. 2a		$2,364,000	$277,000
Alt. 2b		$2,364,000	$277,000
Alt. 3		$2,364,000	$277,000
Alt. 4		$2,364,000	$277,000

7. Recreation – Opportunity Cost of Time

Table B-122. Recreation OCT, Average Annual Values

Scenario	Average Annual Values		
	FWOP	FWP	Benefit
FWOP	$1,000		
Alt. 1		$0	$1,000
Alt. 2		$0	$1,000
Alt. 2a		$0	$1,000
Alt. 2b		$0	$1,000
Alt. 3		$0	$1,000
Alt. 4		$0	$1,000

B. Benefits by Alternative

This section summarizes the future without project costs, future with project costs, and benefits, by alternative and benefit category. Calculations utilize a 50-year project period of analysis and a Fiscal Year 2015 discount rate of 3.375 percent.

Table B-123. Alternative 1 Benefits Summary

Alternative 1	Future Without Project		Future With Project		Benefits	
Category:	**NPV**	**Avg Annual**	**NPV**	**Avg Annual**	**NPV**	**Avg Annual**
Vessel damages	$4,613,000	$192,000	$2,091,000	$87,000	$2,522,000	$105,000
Vessel delays	$33,482,000	$1,395,000	$16,431,000	$685,000	$17,051,000	$711,000
Subsistence	$83,590,000	$3,484,000	$94,534,000	$3,940,000	$10,943,000	$456,000
Travel Cost	$14,129,000	$589,000	$0	$0	$14,129,000	$589,000
Infrastructure Damage	$19,009,000	$792,000	$13,511,000	$563,000	$5,499,000	$229,000
Recreation UDV	$50,076,000	$2,087,000	$56,717,000	$2,364,000	$6,641,000	$277,000
Recreation OCT	$32,000	$1,000	$1,000	$0	$31,000	$1,000
Total	**$204,931,000**	**$8,540,000**	**$183,285,000**	**$7,639,000**	**$56,816,000**	**$2,368,000**

Table B-124. Alternative 2 Benefits Summary

Alternative 2	Future Without Project		Future With Project		Benefits	
Category:	**NPV**	**Avg Annual**	**NPV**	**Avg Annual**	**NPV**	**Avg Annual**
Vessel damages	$4,613,000	$192,000	$1,585,000	$66,000	$3,028,000	$126,000
Vessel delays	$33,482,000	$1,395,000	$14,398,000	$600,000	$19,084,000	$795,000
Subsistence	$83,590,000	$3,484,000	$96,653,000	$4,028,000	$13,062,000	$544,000
Travel Cost	$14,129,000	$589,000	$0	$0	$14,129,000	$589,000
Infrastructure Damage	$19,009,000	$792,000	$13,511,000	$563,000	$5,499,000	$229,000
Recreation UDV	$50,076,000	$2,087,000	$56,717,000	$2,364,000	$6,641,000	$277,000
Recreation OCT	$32,000	$1,000	$1,000	$0	$31,000	$1,000
Total	**$204,931,000**	**$8,540,000**	**$182,865,000**	**$7,621,000**	**$61,474,000**	**$2,561,000**

Table B-125. Alternative 2a Benefits Summary

Alternative 2a	Future Without Project		Future With Project		Benefits	
Category:	**NPV**	**Avg Annual**	**NPV**	**Avg Annual**	**NPV**	**Avg Annual**
Vessel damages	$4,613,000	$192,000	$1,585,000	$66,000	$3,028,000	$126,000
Vessel delays	$33,482,000	$1,395,000	$14,398,000	$600,000	$19,084,000	$795,000
Subsistence	$83,590,000	$3,484,000	$96,653,000	$4,028,000	$13,062,000	$544,000
Travel Cost	$14,129,000	$589,000	$0	$0	$14,129,000	$589,000
Infrastructure Damage	$19,009,000	$792,000	$13,511,000	$563,000	$5,499,000	$229,000
Recreation UDV	$50,076,000	$2,087,000	$56,717,000	$2,364,000	$6,641,000	$277,000
Recreation OCT	$32,000	$1,000	$1,000	$0	$31,000	$1,000
Total	**$204,931,000**	**$8,540,000**	**$182,865,000**	**$7,621,000**	**$61,474,000**	**$2,561,000**

Table B-126. Alternative 2b Benefits Summary

Alternative 2b	Future Without Project		Future With Project		Benefits	
Category:	**NPV**	**Avg Annual**	**NPV**	**Avg Annual**	**NPV**	**Avg Annual**
Vessel damages	$4,613,000	$192,000	$1,585,000	$66,000	$3,028,000	$126,000
Vessel delays	$33,482,000	$1,395,000	$14,398,000	$600,000	$19,084,000	$795,000
Subsistence	$83,590,000	$3,484,000	$96,653,000	$4,028,000	$13,062,000	$544,000
Travel Cost	$14,129,000	$589,000	$0	$0	$14,129,000	$589,000
Infrastructure Damage	$19,009,000	$792,000	$13,511,000	$563,000	$5,499,000	$229,000
Recreation UDV	$50,076,000	$2,087,000	$56,717,000	$2,364,000	$6,641,000	$277,000
Recreation OCT	$32,000	$1,000	$1,000	$0	$31,000	$1,000
Total	**$204,931,000**	**$8,540,000**	**$182,865,000**	**$7,621,000**	**$61,474,000**	**$2,561,000**

Table B-127. Alternative 3 Benefits Summary

Alternative 3	Future Without Project		Future With Project		Benefits	
Category:	**NPV**	**Avg Annual**	**NPV**	**Avg Annual**	**NPV**	**Avg Annual**
Vessel damages	$4,613,000	$192,000	$102,000	$4,000	$4,511,000	$188,000
Vessel delays	$33,482,000	$1,395,000	$8,434,000	$352,000	$25,048,000	$1,044,000
Subsistence	$83,590,000	$3,484,000	$96,653,000	$4,028,000	$13,062,000	$544,000
Travel Cost	$14,129,000	$589,000	$0	$0	$14,129,000	$589,000
Infrastructure Damage	$19,009,000	$792,000	$13,511,000	$563,000	$5,499,000	$229,000
Recreation UDV	$50,076,000	$2,087,000	$56,717,000	$2,364,000	$6,641,000	$277,000
Recreation OCT	$32,000	$1,000	$1,000	$0	$31,000	$1,000
Total	**$204,931,000**	**$8,540,000**	**$175,418,000**	**$7,311,000**	**$68,921,000**	**$2,872,000**

Table B-128. Alternative 4 Benefits Summary

Alternative 4	Future Without Project		Future With Project		Benefits	
Category:	**NPV**	**Avg Annual**	**NPV**	**Avg Annual**	**NPV**	**Avg Annual**
Vessel damages	$4,613,000	$192,000	$102,000	$4,000	$4,511,000	$188,000
Vessel delays	$33,482,000	$1,395,000	$8,434,000	$352,000	$25,048,000	$1,044,000
Subsistence	$83,590,000	$3,484,000	$96,653,000	$4,028,000	$13,062,000	$544,000
Travel Cost	$14,129,000	$589,000	$0	$0	$14,129,000	$589,000
Infrastructure Damage	$19,009,000	$792,000	$13,511,000	$563,000	$5,499,000	$229,000
Recreation UDV	$50,076,000	$2,087,000	$56,717,000	$2,364,000	$6,641,000	$277,000
Recreation OCT	$32,000	$1,000	$1,000	$0	$31,000	$1,000
Total	**$204,931,000**	**$8,540,000**	**$175,418,000**	**$7,311,000**	**$68,921,000**	**$2,872,000**

IX. SUMMARY OF BENEFITS AND COSTS

The summary of total present value of future without project costs, with project costs, benefits, residual damages, and the average annual estimated benefits for the project is summarized in Table B-129.

Table B-129. Summary of Benefits by alternative

Alternative Number	Total Present Value Future Without Project Costs	Total Present Value Future With Project Costs	Total Present Value Benefits	Residual Damages	Average Annual Benefits
1	$204,931,000	$183,285,000	$56,816,000	$148,115,000	$2,368,000
2	$204,931,000	$182,865,000	$61,474,000	$143,457,000	$2,561,000
2a	$204,931,000	$182,865,000	$61,474,000	$143,457,000	$2,561,000
2b	$204,931,000	$182,865,000	$61,474,000	$143,457,000	$2,561,000
3	$204,931,000	$175,418,000	$68,921,000	$136,010,000	$2,872,000
4	$204,931,000	$175,418,000	$68,921,000	$136,010,000	$2,872,000

Table B-130 summarizes project first costs, interest during construction, operations, maintenance and repair along with the present value of costs and the average annual equivalents.

Table B-130. Summary of Costs by alternative

Alternative	First Cost[1]	Interest During Construction[2]	PV OMRR&R[3]	Total PV Project Costs	Average Annual Cost
1	$32,639,000	$1,107,000	$1,444,000	$35,190,000	$1,467,000
2*	$30,494,000	$1,035,000	$1,762,000	$33,291,000	$1,387,000
2a	$40,935,000	$1,388,000	$2,280,000	$44,603,000	$1,859,000
2b	$35,087,000	$1,190,000	$1,447,000	$37,724,000	$1,572,000
3*	$50,121,000	$1,701,000	$2,441,000	$54,263,000	$2,262,000
4*	$56,141,000	$1,905,000	$3,625,000	$61,672,000	$2,570,000

Notes to table:

1. First costs estimates as of April 29, 2014.
2. Interest During Construction assumes 2-year construction window.
3. Operations, Maintenance, Repair, Rehabilitation and Replacement assumes 5% of armor rock every 25 years, anode replacement every 15 years, and float replacement every 40 years.

The economic benefits for each plan are the future without project costs minus the future with project costs. The National Economic Development (NED) plan is defined as the plan which maximizes the net annual benefits. The benefit to cost ratio is the average annual benefits divided by the average annual construction costs. Table B-131 summarizes the benefits and costs for each alternative. The NED plan is highlighted in yellow.

Table B-131. Summary of Benefits and Costs, by alternative

Alternative Number	Present Value Benefits	Average Annual Benefits	Present Value Costs	Average Annual Costs	Benefit to Cost Ratio	Net Annual NED Benefits	Rank by Net NED benefits
1	$56,816,000	$2,368,000	$35,190,000	$1,467,000	1.61	$901,000	2
2*	$61,474,000	$2,561,000	$33,291,000	$1,387,000			
2a	$61,474,000	$2,561,000	$44,603,000	$1,859,000	1.38	$702,000	3
2b	$61,474,000	$2,561,000	$37,724,000	$1,572,000	1.63	$989,000	1
3*	$68,921,000	$2,872,000	$54,263,000	$2,262,000	1.27	$610,000	4
4*	$68,921,000	$2,872,000	$61,672,000	$2,570,000	1.12	$302,000	5

Note: Alternative 2 has been eliminated from consideration due to concerns regarding swell. Alternatives 3 and 4 as presented here have also been eliminated from consideration due to swell and local concerns regarding the basin size interfering with float plane operations. Alternatives 3 and 4 were retained for economic analysis to show that a smaller basin size is incrementally justified and represents the NED plan.

Evaluation of benefits and costs for the given alternatives reveal that Alternative 2b has the greatest net annual NED benefits. The benefit-cost ratio associated with Alternative 2b is 1.63 with net annual NED benefits of $989,000.

XIV. ATTACHMENT – CRAIG SMALL BOAT HARBOR SURVEY INSTRUMENT AND SURVEY RESULTS ANALYSIS

Craig Small Boat Harbor Survey

Research conducted by the U.S. Army Corps of Engineers
– Alaska District –
in cooperation with the City of Craig.

OMB Number 0710-0001

U.S. Army Corps of Engineers
Agency Disclosure Notice

The public report burden for this data collection effort is estimated to average 30 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this data collection, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Services, Executive Services Directorate, Information Management Division, 1155 Defense Pentagon, Washington DC, 20301-1155 and the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, DC 20503, Attn: Desk Officer for US Army Corps of Engineers. Respondents should be aware that notwithstanding any other provision of law, an agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.

PLEASE DO NOT RETURN YOUR RESPONSE TO THE ABOVE ADDRESS

CITY OF CRAIG
ALASKA

Dear Prince of Wales Island boater,

The Craig Harbor is currently utilized beyond its capacity. Many harbor users compete for limited space in both the harbor and upland facilities. Lack of harbor space and facilities negatively affect boating activity in the area. The City of Craig asked the Army Corps of Engineers to assist in identifying potential solutions to crowded conditions at the harbor, and identify future demand for harbor space and facilities. We need your help in answering some questions about your experience using Craig harbor. You were chosen to participate in this survey because you are listed as a current permit holder and/or vessel owner in the Prince of Wales Island region. Your participation is completely *voluntary*. Your answers will help identify the best approach for navigation improvements at the harbor.

Please complete the enclosed survey at your earliest convenience, seal it in the enclosed envelope, and drop it in any mailbox (return postage has been provided). If you would prefer, you can drop your completed survey off at the Craig city offices or the harbormaster's office. All information you provide will be kept *confidential* and will not be associated with your name. If you have comments you would like to pass on to the City or the Corps, there is space at the end of the survey. The questionnaire has an identification number so your name can be crossed of the list when you respond and you will not receive further reminder notices.

We appreciate your assistance with this important project. Once complete, the survey results will be made available from the Army Corps of Engineers to the City, or can be requested directly from the Corps.

Thank you,

Jon Bolling
City of Craig
City Administrator

Vessel Survey Number _____

Survey Purpose: The U.S. Army Corps of Engineers in cooperation with the City of Craig is sending this survey to you to identify boating activity and the demand for moorage in Craig. Results of this survey will be used to justify future harbor development at Craig. Participation in this survey is **completely voluntary**. Failure to provide all or any part of the information will not affect you or any business you may have with the U.S. Army Corps of Engineers or the City of Craig. All responses will be aggregated to protect confidentiality of the respondent. The information collected will be managed in accordance with Army records retention requirements. If you have any questions or need to obtain additional copies of the survey, please contact Lorraine Cordova at the U.S. Army Corps of Engineers, at (907) 753-2672 or by email at Lorraine.a.cordova@usace.army.mil .

Please answer the following survey questions for one vessel only. Survey forms are available from the City's or harbormaster's office or the Corps for additional vessels using the Craig Harbor.

1. Please describe your vessel below:

a. Vessel size:

Length Overall _____ feet
Beam _____ feet
Draft (unloaded)_____ feet
Draft (loaded) _____ feet

b. Vessel speed:

Average cruising speed _____ knots
Average speed when fishing _____ knots
Minimum maneuvering speed in harbor _____ knots

c. Vessel primary purpose (check one that best applies):

Recreation boat ☐
Subsistence boat ☐
Charter/sightseeing vessel ☐
Water taxi boat ☐
Commercial fishing vessel ☐
Tender ☐
Yacht ☐
Other:_____ ☐

2. a. Was this vessel homeported in Craig in 2012?

☐ Yes (Skip to Question 3) ☐ No

If no, which community or harbor was your homeport?_____

b. If there was additional harbor space, would you seek transient or permanent moorage at Craig?

☐ Yes ☐ No

If no, please explain: _____

(Skip to Question 11)

c. If yes, please indicate the type of moorage you would prefer:

permanent slip ☐ (year-round stall assignment)

transient boat slip ☐ (occasional slip user)

boat launch user ☐ (no need for moorage stall)

3. What is your vessel's current moorage at Craig?

Permanent slip ☐

Transient parking ☐

Boat launch user ☐

Don't use Craig Harbor ☐

If you indicated transient, boat launch user, or you don't use Craig Harbor, would you seek permanent moorage if it was available?

☐ Yes ☐ No (Skip to Question 11)

4. What problems have you personally encountered at the Craig Harbor in the past five years? (Check all that apply)

	Problem		Problem
	Inadequate channel depths		Inadequate upland parking
	Inadequate depths at slips		Inadequate storm protection
	Inadequate security at docks		Poor water quality
	Overcrowding/congestion		Vandalism
	Inadequate moorage		Line breakage
	Hull scratches or dents		Lack of haulouts for repairs
	Hull punctures		Swamped vessel
	Slip rental costs too high		Inadequate boat storage
	Ice in harbor		Other (specify):_____
	Damaged buoys		

5. Has your vessel sustained damages outside of normal wear and tear as a result of Craig Harbor conditions?

☐Yes ☐No (Skip to Question 7)

6. If your vessel sustained damages outside of normal wear and tear at the Craig Harbor during the last five years, please indicate the kind of damages and the cost for repairs. If you experienced damages but did not have repairs made or did the repairs yourself, please estimate the commercial cost of repairs/replacement:

Year	Description of Damages:	Cost:
2008		
2009		
2010		
2011		
2012		

7. If you have encountered delays getting into or out of Craig Harbor during the 2012 season due to congestion or other harbor conditions, please indicate the reason, number, and average length of delays in the following table:

Reason for delay:	Number of times in 2012 you had delay	Average length of delay (hours)
Wait for tide change		
Another boat had to be moved from my stall		
Harbor staff not available		
Had for wait for rafted boat owner to return		
Launching delays at ramp		
Other (please list):_____		

The City of Craig purchased the uplands to the Downtown (Craig Cannery) Property with the intent of expanding harbor facilities there. The next questions address your interest in using these new facilities in the future.

8. With additional moorage space and harbor facilities at the Downtown (Craig Cannery) Property, would you use your boat more often than you do under current conditions?

☐Yes ☐No (Skip to Question 9)

b. If yes, please estimate how many <u>additional</u> days you think you would use your boat annually.

_____additional days

9. The City is planning additional facilities at the Downtown (Craig Cannery Property) harbor. Please indicate facilities you think would be needed and whether you think those facilities are Important, Somewhat Important, Not Important, or you are Neutral:

Additional Facilities	Important	Somewhat Important	Not Important	Neutral
Working floats				
Drive down float				
Waste oil disposal				
Restrooms				
Boat ramp				
Parking				
Travel lift				
Cold storage lockers				
Ice machines				
Electricity on dock				
Fish cleaning station				
Winter boat storage (upland)				
Gear storage				
Other (please list): _____ _____				

COMMERCIAL FISHING/TENDER VESSELS.

Only answer the following questions if you indicated in Question 1C that this is a commercial fishing or tender vessel, otherwise skip to Question 11.

10. Think of your commercial fishing activity in the Craig region. What was the average crew size, including skipper, for commercial fishing trips in 2012?

_____ # of crew, including skipper

b. Please indicate the percent of catch and where you currently deliver: (Check all that apply in left column and indicate the percent of catch delivered in right column.)

☐ Shore-based plant in Craig _____ %

☐ Other shore-based plant not in Craig _____ %

☐ At-sea processor _____ %

☐ Tender _____ %

☐ Other (describe):_____ _____ %

Column should total 100 percent.

c. If there was additional moorage in Craig, would you change where you deliver your catch?

☐ No, would not change where I deliver (Skip to Question 11)

☐ Yes

If **yes**, please indicate the percent of catch and where you would deliver. This is an estimate of how your delivery **changes** as a result of increased moorage at Craig. (Check all that apply in left column and indicate the percent of catch in the right column.)

☐ Shore-based plant in Craig _____ %

☐ Other shore-based plant not in Craig _____ %

☐ At-sea processor _____ %

☐ Tender _____ %

☐ Other (describe):_____ _____ %

Column should total 100 percent.

11. Please provide any other comments that you would like to share with the study team or the City of Craig:

_____

_____

_____

_____

_____

_____

_____

_____

_____

THANK YOU FOR YOUR PARTICIPATION.

Please return the questionnaire in the postage paid, pre-addressed envelope provided to:

U.S. Army Engineer District, Alaska
CEPOA-PM-C-PL
PO Box 6898
JBER, AK 99506

Or:

Drop off at the Craig City Office or Harbormaster's Office

Craig Small Boat Harbor Survey Results – April 2014

Introduction

This document presents a summary of the City of Craig Small Boat Harbor vessel survey conducted in March 2013. In conjunction with the U.S. Army Corps of Engineers (USACE), Alaska District, the City of Craig mailed 1,527 surveys to current or potential users of the Craig harbor. One hundred and seventeen surveys were returned as undeliverable. USACE received a total of 338 completed surveys for a response rate of 24 percent. At a 95 percent confidence level, the margin of error for general questions asked of all survey respondents is within plus/minus 5 percent.

USACE prepared an Excel spreadsheet to use in recording the responses received. Survey respondents were instructed to answer all questions as they pertain to one vessel only and for activities that occurred in calendar year 2012. Additional copies of the survey were available from the City of Craig offices and from USACE.

Survey questions were categorized two ways; general and commercial fishing/tenders. The following discussion summarizes responses to each question in the order which they were asked. A copy of the survey instrument follows this summary.

Vessel Characteristics

Length, Beam, and Draft

The first survey question asked existing and potential harbor users about their vessel characteristics. Approximately 25 percent of survey respondents had vessels greater than 50-feet length overall, followed by 27 percent of vessels between 41- and 50-feet, 20 percent each of vessels between 21- and 30-feet and between 31- and 40-feet, and 7 percent less than 20-feet. Table 1 shows a summary of responses to this question broken down by vessel length.

Table 1. Vessel Size and Draft (measured in feet)

Length Overall (ft)	0-20 ft	21-30 ft	31-40 ft	41-50 ft	>50 ft	n (sample size)
Number of Vessels	22	66	66	89	82	325
Beam, average (ft)	6.25	8.42	11.45	13.74	18.41	294
Draft (unloaded), average (ft)	1.28	2.49	4.48	5.42	7.38	271
Draft (loaded), average (ft)	1.76	2.98	5.27	6.05	8.89	252

Note: Thirteen survey respondents did not answer the question regarding vessel length overall, 44 did not respond to beam, 67 did not respond to unloaded vessel draft, and 86 did not respond to loaded draft so sample size does not equal total responses to the survey.

Vessel Speed

Respondents were asked about vessel speeds while cruising, fishing, and maneuvering in the harbor. The average cruising speed for all responses was 11.7 knots, the average speed while fishing was 2.5 knots, and the average speed in the harbor was 1.9 knots. Table 2 shows the responses to these questions broken down by vessel length.

Table 2. Average Vessel Speed (Knots)

Length Overall (ft)	0-20 ft	20-30 ft	30-40 ft	40-50 ft	>50 ft	n (sample size)
Number of Vessels	22	66	66	89	82	325
Average Cruising Speed	20.50	19.84	9.89	8.00	8.45	315
Average Fishing Speed	3.22	2.34	1.87	2.24	3.10	270
Min Maneuvering Speed, average	2.27	2.05	1.75	1.82	1.90	282

Note: Twenty-three survey respondents left the question regarding average vessel cruising speed blank, 68 did not respond to the average speed while fishing, and 56 did not respond to minimum maneuvering speed in the harbor so sample size does not equal total survey responses.

Vessel Purpose

Respondents were then asked to identify the primary purpose of their vessel. The survey directed that only one response per vessel be chosen. In the instances where more than one response was chosen, the higher priority item was counted once – no survey was counted with more than one vessel purpose. Priority was given first to commercial operations (commercial fishing, tenders, charter/sightseeing/water taxi vessels), then to subsistence, and lastly to recreation, yachts, and 'other' vessels. The majority of respondents, 50 percent, indicated that they are primarily commercial fishing vessels.

Table 3. Vessel Primary Purpose
(n = 326)

Vessel Primary Purpose	Number of Responses	Percent of Responses
Recreation Boat	106	32.52%
Subsistence Boat	11	3.37%
Charter/Sightseeing Vessel	12	3.68%
Water taxi Boat	0	0.00%
Commercial Fishing Vessel	164	50.31%
Tender	1	0.31%
Yacht	21	6.44%
Other:	11	3.37%
Total	**326**	

Note: Twelve respondents chose not to answer this question.

Harbor Use

Homeport in 2012

Survey responses revealed that 96 respondents (29.5 percent) homeported their vessel in Craig in 2012. Of the 229 respondents who indicated that they did not homeport their vessel in Craig, 155 provided the name of their current homeport. Juneau was the most popular response for homeport other than Craig.

Table 4. Vessel Homeport
(n = 251)

Homeport	Number of Responses	Percent of Responses
Craig, AK	96	38.25%
Cordova, AK	1	0.40%
Hollis, AK	1	0.40%
Hoonah, AK	1	0.40%
Hydaburg, AK	5	1.99%
Juneau, AK	17	6.77%
Ketchikan, AK	10	3.98%
Klawock, AK	11	4.38%
Petersburg, AK	12	4.78%
Point Baker, AK	1	0.40%
Port Protection, AK	1	0.40%
Sitka, AK	8	3.19%
Thorne Bay, AK	2	0.80%
Wrangell, AK	1	0.40%
Other Alaska	21	8.37%
Outside Alaska:		
California	2	0.80%
Oregon	6	2.39%
Montana	1	0.40%
Washington	44	17.53%
British Columbia	10	3.98%

Interest in future moorage at Craig

Survey respondents who indicated that Craig was not their current homeport were then asked if they would seek transient or permanent moorage at Craig if there was additional harbor space. Two hundred and thirty four boaters responded to this question regarding future Craig moorage. Approximately 60 percent of survey respondents (140 responses) indicated that they would use moorage at Craig with additional harbor space. Of those who indicated they would not seek moorage at Craig, 72 provided a reason. The most common reasons were that respondents lived or homeported in another community, or only required temporary space at Craig.

Table 5. If there was additional harbor space, would you seek transient or permanent moorage at Craig?
(n = 234)

	Number of Responses	Percent of Responses
Yes	140	59.8%
No	94	40.2%

Table 6 shows the most frequent responses provided as to why respondents would not seek moorage at Craig. This was an open-ended question. For this analysis, similar responses were aggregated into categories even if the text from the responses was not an exact match.

Table 6. Explanations for no interest in moorage at Craig
(n = 72)

Explanations	Number of Responses	Percent of Responses
Live/Homeport Elsewhere	22	30.6%
Infrequent User/Occasional Visitor	8	11.1%
Have Permanent Moorage in Craig	6	8.3%
Tourist	7	9.7%
Former Vessel Owner/Permit Holder	3	4.2%
Not my Homeport	1	1.4%
Limited Stalls and Power	1	1.4%
No Plans to Use Craig	3	4.2%
Fish Elsewhere	3	4.2%
Only Need Skiff Space/Transient Moorage/Seasonal Moorage	13	18.1%
Always Space Available	1	1.4%
Tie Up Elsewhere in Craig	2	2.8%
Keep Boat on Trailer	1	1.4%
Depends on if there was a real breakwater	1	1.4%

Respondents who would use moorage at Craig were asked to indicate the type of moorage they would prefer. All but two of the 140 respondents who stated they would use moorage at Craig provided an answer to the type of moorage they would use. Most, 64 percent, preferred transient moorage, while 13 percent preferred permanent moorage, and 1 percent preferred boat launch use.

Table 7. Type of Moorage Preferred by those who indicated they would use Craig
(n = 138)

Response	Number of Responses	Percent of Responses
Permanent Slip	23	13.1%
Transient Boat Slip	113	64.2%
Boat Launch User	2	1.1%

Current Moorage at Craig

Survey respondents were asked what type of moorage they currently use at Craig: permanent, transient, boat launch, or don't use Craig Harbor. The most popular response was transient parking, at 48 percent, followed by permanent slip at 23 percent.

Table 8. Current moorage at Craig
(n = 287)

Current Moorage at Craig	Number	Percent
Permanent Slip	67	23.3%
Transient Parking	139	48.4%
Boat Launch User	19	6.6%
Don't use Craig Harbor	62	21.6%

Note: Fifty-one respondents did not answer this question.

The survey then asked those who indicated transient, boat launch, or don't use Craig Harbor if they would seek permanent moorage if it was available. Table 9 shows the responses to this question.

Table 9. Those who would seek permanent moorage if it was available
(n = 201)

Response	Number	Percent
Yes	40	19.9%
No	161	80.1%

Problems Encountered

Survey respondents were asked to indicate what problems they had personally encountered at the Craig harbor in the past five years. Respondents were provided with a list of possible problems and were asked to choose as many as applicable. There was also an open-ended section where respondents could describe their problems at Craig Harbor. The most frequent number of problem categories cited was 2 per respondent, while the highest number of problem categories sited on a single survey was 8.

The most frequently cited problem was overcrowding and congestion, at 25 percent of respondents. Other frequent issues include inadequate moorage and inadequate upland parking. Table 10 summarizes the responses to this question.

Table 10. Problems Experienced at Craig Harbor
(n = 511)

Problem	Number of Responses	Percent of Responses
Inadequate Channel Depths	44	8.61%
Inadequate depths at slips	14	2.74%
Inadequate security at docks	25	4.89%
Overcrowding/congestion	127	24.85%
Inadequate moorage	65	12.72%
Hull scratches or dents	18	3.52%
Hull punctures	0	0.00%
Slip rental costs too high	21	4.11%
Ice in harbor	12	2.35%
Damaged buoys	0	0.00%
Inadequate upland parking	62	12.13%
Inadequate storm protection	23	4.50%
Poor water quality	14	2.74%
Vandalism	15	2.94%
Line breakage	6	1.17%
Lack of haulouts for repairs	21	4.11%
Swamped vessel	0	0.00%
Inadequate boat storage	16	3.13%
Other	28	5.48%

Damage Assessment

Survey respondents were asked if their vessel sustained damages outside of normal wear and tear as a result of Craig Harbor conditions. Most respondents, 88 percent, indicated that they had not experienced unusual vessel damage at Craig Harbor.

Table 11. Has your vessel sustained damages outside of normal wear and tear as a result of Craig Harbor conditions?
(n = 181)

Response	Number of Responses	Percent of Responses
Yes	21	11.6%
No	160	88.4%

Note: One hundred and fifty seven boaters did not answer this question.

Cost of Repairs

If the respondents sustained damages outside of normal wear and tear in the last five years, they were asked to indicate the kind of damages and the cost for repairs. The years 2008, 2010, 2011, and 2012 received the highest number of reported damages, with 6 respondents indicating damage in each of those years. There were almost six annual repairs necessary from 2008 through 2012 with an average damage of about $1,600 per incident.

Table 12. Annual Cost for Repairs
(n = 22)

Year	Number of Damages Reported	Average Repair Cost per Incident
2008	6	$ 4,150.00
2009	4	$ 1,225.00
2010	6	$ 287.50
2011	6	$ 256.25
2012	6	$ 2,280.00
Average	**5.6**	**$ 1,639.75**

Delay Assessment

The survey asked respondents whether they experienced delays getting into or out of Craig Harbor during the 2012 season due to congestion or other harbor conditions. The survey provided a list of possible reasons for delays and also left room for respondents' own descriptions. The survey further asked how many times the boater was delayed in 2012 and the average length of each delay. Table 13 shows the number of delays by response category as well as the average number of delays per response and the average length of each delay.

Fifty-eight boaters responded to this question. The most popular reasons for delays were another boat had to be moved from my stall, wait for tide change, and had to wait for rafted boat owner to return, with 28 percent, 24 percent, and 21 percent of responses, respectively. Seventeen percent of total survey respondents experienced at least one delay and the average length of delay was approximately 5 hours.

Table 13. Craig Harbor Delays in 2012
(n = 58)

Reason for Delay:	Number of Responses	Average # of Delays per Response	Average Delay Length (hours)
Wait for tide change	20	3.30	3.68
Another boat had to be moved from my stall	24	2.73	10.64
Harbor staff not available	11	2.45	1.54
Had to wait for rafted boat owner to return	18	3.06	3.03
Launching delays at ramp	3	3.67	1.00
Other	8	2.63	10.00

Note: The 'Other' responses included the following: Ice (two respondents), getting around town due to vehicles and no dock space, congestion (two respondents), not enough staff, no slips, and crowding/poor use of available space.

Additional Facilities

The survey then addressed harbor users' interest in using new facilities at the Craig Cannery Property in the future. The survey first asked if respondents would use their boats more often than currently if there was additional moorage space at the Craig Cannery Property. Of the 194 responses to this question, 20 percent of respondents indicated that they would use their boat more.

Table 14. Additional Boat Use with Moorage Space at Craig Cannery Property
(n = 194)

Response	Number of Responses	Percent of Responses
Yes	38	19.6%
No	156	80.4%

Those who stated they would use their boat more were asked to estimate the additional days they would use their boats per year. The average for all respondents was 28 additional days of vessel use.

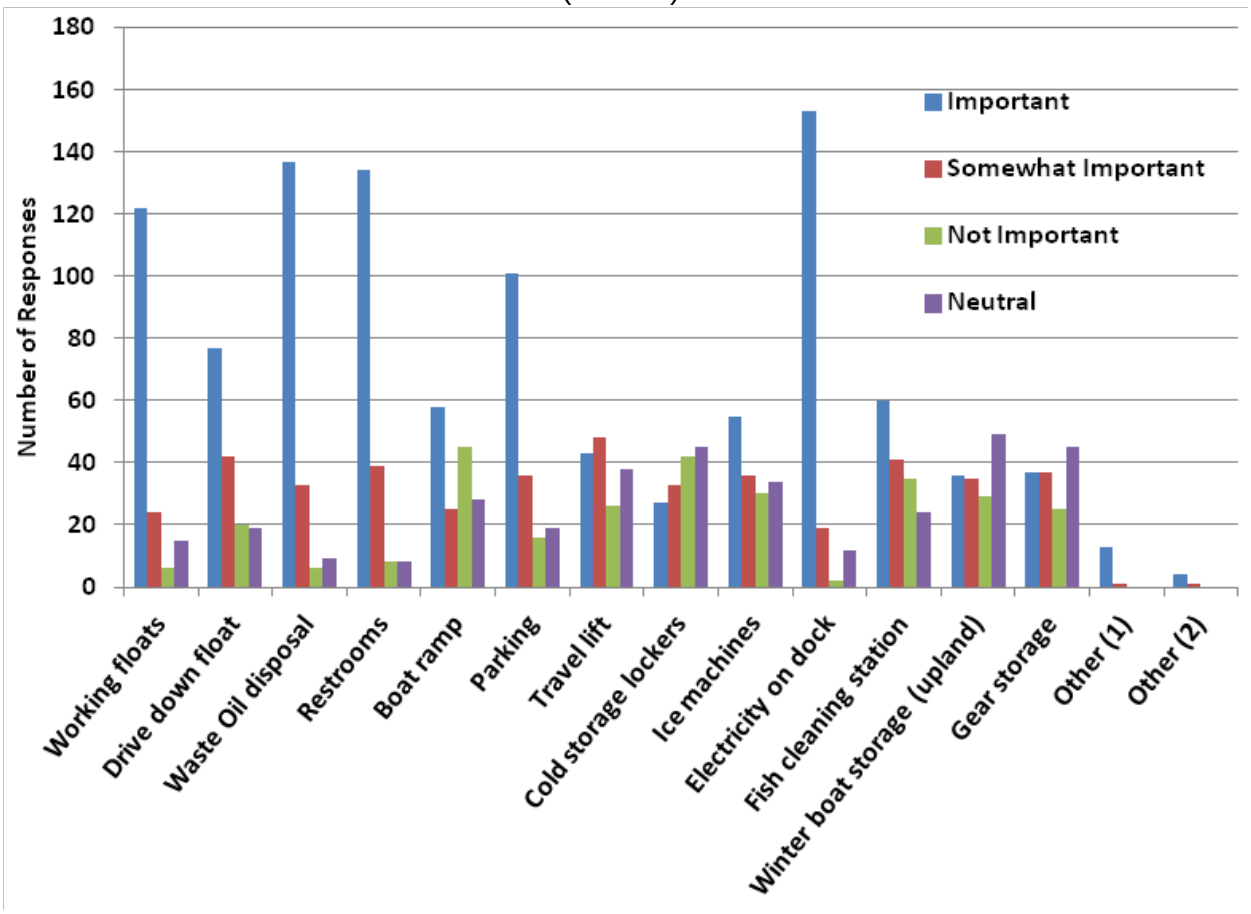
Table 15. Additional Days of Boat Use with Additional Moorage Space
(n = 33)

Additional days per year	
Average	27.9
Maximum	200
Minimum	3

Upland Facility Assessment

The City of Craig is also planning additional facilities at the Downtown (Craig Cannery Property) harbor. The next question asked respondents to indicate the relative importance of a variety of additional upland facilities by selecting either Important, Somewhat Important, Not Important, or Neutral. Figure 1 shows the results of this question. Electricity on dock, waste oil disposal, and restrooms were the most frequently desired facilities (based on the frequency of respondents selecting 'Important').

Figure 1. Summary of Importance of Additional Upland Facilities
(n = 201)



Note: "Other" responses included the following items: breakwater, internet (3 responses), skiff tie up area, increased moorage, laundry, long term parking, transient moorage, long term affordable moorage, showers (2 responses), lighting, bad water disposal, carts, easy tie-up, deep draft moorage, Web Loft, float for trailers to work on, poles and rigging, multi-use hoses, clean up, dry winter boat storage, protection from wind, potable water, washdown water, skiff haulouts, and crane or hoist for loading vessels.

Commercial Fishing/Tender Vessels

The Corps received 165 completed survey responses from boat owners who selected commercial fishing or tender as the primary purpose of their vessel. This equates to a response rate of 11.7 percent. At a 95 percent confidence level, the margin of error for questions asked of commercial fishing respondents is within plus/minus 7.6 percent.

The Craig Survey instrument directed respondents not currently homeported in Craig and with no future interest in moorage at Craig to skip the commercial fishing/tender boat questions. There were 118 responses that indicated commercial fishing or tender vessels and were homeported in Craig or had a future interest in using Craig. However, a total of 136 survey

respondents answered at least a portion of the commercial fishing/tender vessel questions. All of these responses are presented in this analysis.

Employment – Crew Size

A total of 136 survey responses indicated the number of crew aboard their commercial fishing or tender vessel. The average crew size was 3, including the skipper, in 2012. The minimum crew size was 1, and the maximum was 6 on a single vessel. Table 17 shows the average crew size per vessel, by vessel size.

Table 16. Average Crew Size (including skipper) of Craig Commercial Fishing/Tender Vessels, by vessel length
(n = 136)

Length Overall (ft)	0-20 ft	20-30 ft	30-40 ft	40-50 ft	>50 ft
Crew Size, average	n/a	1.89	2.07	2.17	4.61

Product Delivery

The survey then asked commercial fishing vessels and tenders to indicate where they currently deliver their commercial catch and the percent delivered to each location: shore-based plant in Craig, other shore-based plant not in Craig, at-sea processor, tender, or other (with a prompt to provide an explanation). One hundred and thirty commercial fishing/tender vessels provided responses to this question. Most respondents utilized one or two product delivery locations or methods, each with 40 percent of responses, while 18 percent of respondents utilized three delivery methods, and 2 percent utilized four. Table 18 summarizes the responses to this question.

Table 17. Product Delivery Method for Commercial Fishing and Tender Vessels, 2012
(n = 130)

Facility Type	Number of Responses	Average Percent of Catch Delivered to that Facility
Shore-based plant in Craig	92	57.7%
Other shore-based plant not in Craig	44	36.4%
At-sea processor	8	31.6%
Tender	84	58.3%
Other	9	65.6%
Total	**237**	

Anticipated Future Product Delivery

Commercial fishing and tender vessel owners were then asked if they would change where they deliver their catch with additional moorage available at Craig. A total of 131 vessel owners provided a response to this question. Most respondents, 87 percent, indicated that they would not change their deliveries.

Table 18. Potential Changes to Product Delivery Method based on Additional Moorage at Craig
(n = 131)

Response	Number of Responses	Percent of Responses
Yes	17	13.0%
No	114	87.0%

Survey respondents who indicated that they would change their commercial fishing deliveries based on additional moorage availability at Craig were asked to indicate how and where they would deliver their catch in the future with moorage at Craig.

In general, the respondents who indicated they would change their deliveries noted that they would deliver more to the shore-based plant in Craig, and less to either another shore-based plant or tender.

Table 19. Product Delivery Method for Commercial Fishing and Tender Vessels, with Additional Moorage Availability at Craig Harbor
(n = 16)

Facility Type:	Number of Responses	Average Percent of Catch Delivered to that Facility
Shore-based plant in Craig	12	55.4%
Other shore-based plant not in Craig	7	29.3%
At-sea processor	0	n/a
Tender	11	60.0%
Other	0	n/a
Total	**30**	

Other Comments

Survey respondents were given the opportunity to provide additional comments that they would like to make about the project, or comments to pass along to the city. Many of the survey respondents took this opportunity to provide their feedback. The following comments are summarized into categories; similar comments have been annotated parenthetically.

1. Praise for Craig (facilities & staff)

- Enjoyed the visit to Craig and hospitality
- New harbormaster much better than [previous harbormaster]. I didn't appreciate my boat spot being used without notification when I was out fishing for a day or two and then subsequent hassle when I came back in.
- Craig is my favorite harbor and town during my summer salmon fishery. Harbormaster is always very helpful.
- Harbor staff is always helpful and courteous; they go out of their way to help when needed.

- Harbor crew are exceptional. Always helpful, courteous, and responsive. No one steals off of boat or bothers in any way. Best harbor in Southeast Alaska.

- Told to move 3 times by other than harbor staff. Hostile attitude from live-aboards.

- Transient moorage on the main finger South Harbor has been as good as any harbor in SE Alaska. Power and water are great. Staff of harbor are outstanding in their past service to us. Minor improvement would be the ability to temporarily park (i.e. taxi) at the top of the ramp, unload purchased groceries and supplies and store them temporarily in a lean-to type shelter out of the rain while forwarding them to vessel. Wi-Fi connection would be appreciated. Thanks to the Craig Harbormaster and staff. Good luck with your much needed harbor expansion.

- Craig is not usually our destination. We cruise all over SE and only stop and spend a night or two in Craig to resupply. It's a really well managed harbor and nice town.

- Generally very pleased with harbor staff and facilities over the past 14 years.

- Even though there have been some delays in coming and going due to overcrowding, I feel the harbor department does an excellent job working with everybody.

- Craig is a wonderful place to visit. With improved facilities we would spend much more time there on our annual cruise north.

- We really enjoy our visits to Craig. We utilize the restaurants, fuel facility, hardware store, and more. Better more available transient facilities would encourage us to stay longer.

- Great harbor staff (3)

- The Craig harbormasters have always been able to accommodate us in the North Harbor – When cruising it is not possible to schedule arrivals due to distances and weather issues so the flexibility of the staff is greatly appreciated. During inclement weather the harbor is often crowded – fortunately we have avoided such times.

- Great, but limited harbor. Great harbormaster.

- I've always felt welcome in Craig. I'm only in that area during the roe on kelp fishery, late March early April.

- Enjoyed visit. Food and service. Good and convenient.

- I had no problems as a transient. (2)

- Craig is a great place to visit. We were very happily accommodated by harbor personnel and the town. We are hopeful that there is transient room for us for future visits.

- We have always found Craig to be friendly and willing to accommodate us.

- Well run, good harbormaster. I would consider permanent moorage if I were to leave my boat in Alaska. Easy to get to/from Ketchikan.

- Good docks. Good tourist information. Marina office very inaccessible. Good harbormaster.

- Craig is centrally located for changing nets: everything is correctly laid out.

- The harbormasters make your facilities work and work well. Please consider proper staffing levels as facilities are added. The harbor does a wonderful job of balancing and attending to commercial and pleasure craft. Support for commercial operations is a Craig strength.

- We travel to Craig from the Seattle area for pleasure. Craig is one of our favorite places to visit. People are great and we love dinner at Ruth Ann's. See you this summer.

- Restrooms nicely maintained; harbormaster always helpful and polite.

- We just moored in Craig overnight and did not notice any particular problems except we moored in a slip reserved for a fishing boat that was out fishing. We were treated quite hospitably in Craig.

- Very happy with current harbor facilities

- Craig Harbor has always treated me and my crew very well.

- I love my slip (next to the harbormaster skiff). I don't want to move.

- Craig is one of my very favorite towns in Southeast Alaska. A grass roots fishing community with all the trimmings. Craig rocks!

- The harbor staff was very helpful and we look forward to spending more time there.

- We have used Craig Harbor in 2013 and found the harbor very accommodating. The harbor is a great asset to Prince of Wales Island.

- Harbormaster very helpful

2. No interest in using Craig

- Happy in Klawock

- Have not been to Craig in many years.

- I was only there once for an emergency.

- I was cruising the waters on the west side of the island and spent two nights in Craig. Rented a car and explored the island. I think I used the last area at the end of the slips designated for transient moorage since I have seen the area. I have no plans to return.

- My rental boats are used near Petersburg

- I no longer own a boat or have moorage at Craig Harbor. (5)

- We just visit Craig occasionally.
- I berth my boat in Coffman Cove Harbor.
- Never used launch permit

3. Facility Needs at Craig/Current Issues with Craig

Moorage:

- Craig needs more transient and permanent moorage access. Rocks at low tide are a hazard.
- I have never had trouble finding a spot to tie up. The harbormaster is great at trying to accommodate as much as possible.
- Needs more moorage for seine vessels.
- Need more moorage to take care of demand.
- Needs additional transient moorage (4)
- Additional moorage space is desperately needed! (3)
- Very limited available transient moorage with electricity/power during summer months
- Both North and South Coves are in need of additional transient space with adequate power – minimum of 30 amps.
- Need more permanent slips with electricity for boats 32-45 feet
- More transient moorage for boats less than 30-feet. I would like to occasionally leave my boats in town during forecast storms.
- Craig does need more moorage, in the North Harbor
- Very busy harbor when fleet is in Area 4 (coastline outside of Craig). Additional moorage would be helpful and most likely profitable.
- More transient moorage needed on big pink years. Everybody lives with it like it is! (2)
- The slips for small boats are too small. It is difficult to get in and out with a boat right next to you.
- It would be great to have more space. I leave Craig to fish the summer months in Coffman Cove but have to share with a Washington resident in the off season. I think they should change the permanent stalls in Craig for only those who receive a state dividend. The harbor is managed well but more stalls and a ramp to drive gear to a boat would be nice (ramp to a float).

- Have appreciated being accommodated but at times the only moorage available has been challenging to safely maneuver. We have high skill level and a bow thruster and thanks to good harbor workers have always made it work.

- The time I visited Craig the moorage was unprotected from the surge and upon leaving the depth at the entrance was too low.

- Craig is a great town. During salmon season there's crumby moorage. Had to get around without seine skiff. Hard to tie up – find a spot. Facilities like laundry and showers would be great – pool is OK, but not handy. A haulout would be great, hard to justify. Work float is crowded and used as storage. Would love to see and support a better harbor.

- Craig harbor is a good place to keep my boat during dive season, but lately I've found that North Cove plugged with boats and unable to park. South Cove is less desirable because it is more exposed to south winds and prone to damaging my boat when I'm not on it.

- We with permanent moorage are OK. But the number of boats increases in the summer months causing severe overcrowding boats rafting six and seven deep at times. This is very unsafe and makes resupply difficult at best there is very little transient moorage available.

- Could always use more room for boats and cars

- I always use the North Harbor transient moorage. In a good blow it can get quite rough there.

- Love Craig but using tender all the time is a pain for the wife who loves to shop and eat out.

- It would be nice for pleasure boaters to know you have more slips. I think more would come visit.

- I have been to Craig with my boat only once, and stayed in the transient area. It was very stormy. The area we were on was not very protected with lots of swells and wind. I had to help another boat in docking. It was too rough for them to manage. You might consider extending the breakwater to provide more protection.

- My vessel participates in the Southeast Alaska dive fishery. We are in and out of the harbor several days a week at off hours. Our season starts in October, runs through winter month and ends in spring. The competition for moorage is extremely tough. It's a constant battle each week.

- Harbor shelter from west and north winds would help North Harbor. Deeper water along docks would be nice as well. Any upgrades to keep your local fleet and visitors happy will be appreciated.

- We have been waiting over 5 years for permanent slip. Is incredibly frustrating to be provided a slip that several boats have paid for – especially when they all want to dock at the same time.

- I've been waiting for full time stall assignment for 4 years. Through no fault of the harbormaster- just none available.

- We would use Craig Harbor as a seasonal transient moorage base off and on from May to September if moorage was available. Reliable Wi-Fi is another consideration, along with increased transient moorage. Harbor staff has been helpful in the past but the facilities need expansion and updating.

- Need more ample slips for the sportfishing/charter sized boats with ample cleaning stations and waste disposal.

- I fish for Geoducks in Craig during the winter it would be nice to have assigned transient slips to make it easier to moor your boat when it is windy when we come in at night.

- More float plane slips are needed.

- No slips available so 8 months a year my boat is docked in Klawock.

- Craig needs more adequate moorage. It's been that way for years. Started fishing out in Craig Area since 1996, always full in summer. I believe more stalls would be helpful. A new harbor is needed really bad. I believe more people would moor their boats permanently. This dock or float should be for all vessels (user groups).

- More available moorage will attract more yacht/recreational activity to the Craig area.

Launch Ramps:

- If putting new launch in, ensure that it can be utilized at low tide. I damaged both props at Thorne Bay's launch on a low tide.

- I only used the launch ramp a couple of times. It was adequate at all tide levels.

Depth:

- North Cove reef west side out to marker, very shallow boats hit bottom at low tide (boats of all sizes)

- The East side channel needs to be deeper all the way up to the grid

- A little dredging on north side of harbor would be nice. I have hit bottom more than once.

Congestion:

- Harbor can get congested at times making it difficult to get in and out. Slight wind causes challenges in docking.

- Harbor can be very busy with commercial fishing traffic. Sometimes moored 2-3 deep.

- Like Craig but each time there we are penned in by commercial vessels. No problem – fishing comes first but it would be nice if we didn't have to shuffle around.

- Craig Harbor too crowded. I try to skip Craig or go to Klawock instead.
- I avoid Craig as much as possible due to harbor congestion.
- Get rid of a bunch of charter boats owned by people who don't even live here and aren't Alaskan residents – that should give you plenty of berths at the harbor.

Electrical Power:

- More shore power in North harbor.
- Craig Harbor needs slips with electricity or manage the slips with electric already available. Also needs better management of transient vessels during fish openings. So boats don't have to race to dock to get moorage. Assigned transient moorage worked really well years ago for dive fleet.
- For yachts my size or larger, a source of 50-amp, single phase power at least 208 volts or 240 volts is important. Also wired so that increased loads don't result in brown-outs.
- Slips with 50A 120/240V power would be ideal.
- Need more electrical hook ups

Water:

- The water system (pipes and faucets) in North Cove need to be repaired – some faucets have been disabled when the lines under the dock broke and have never been repaired.

Internet Access:

- No internet Wi-Fi limits how much I visit Craig Harbor. Ability to conduct business while in Craig is critical but not provided.
- Great rec centers needs free Wi-Fi at marina. Also be nice if you could turn off the rain during the summer.
- Need internet on docks along with electric

Parking:

- Upland parking is inadequate in all harbors (2)
- Parking at the town boat dock is not adequate. Ramp is difficult to access/maneuver when lot is full. Need to extend the ramps so putting in or taking out can be accomplished even in low tide, especially if windy.
- Need adequate, low or no cost parking as I live remote.

Accessibility:

- Easy access transient slips close to hardware store and supermarket will make the community money.

- Some people in North Cove are a long way from where you enter. A facility that was closer to the entry spot would be nice. Many don't have permanent moorage which would be nice.

- Craig's dock is very nice but my boat is ¼ mile from the parking lot. The end of the dock gets heavy weather and is pretty worn. My vessel is like a breakwater for the rest of the dock. My finger is badly worn. Would use boat more often if it were closer to parking. I often get completely soaked walking down to boat. Dock water makes me sick; took years to figure that out.

Other Facilities:

- To be able to drive down to load and unload would be a great convenience. To add transient moorage and a place to park our vehicle would be very important to us. A drive down float where we would be obligated in all weather to walk several blocks to get and again to park a vehicle or to have to move the boat from one dock to another would negate much of the convenience. A drive-down float is an invaluable asset to the boating community.

- A drive down dock would be of well use for both commercial, charter, and sport fishing fleet. And be utilized year-round. (2)

- Drive down ramps are a must for the fishing fleet of Alaska. Cranes to load and unload are also required. However, they must be strong enough and be open to use 24/7. Just look at the setup in Petersburg Harbor and use that as a model to base off of.

- I would like to see a better video system put in. I was robbed multiple times in the past two years and even prior to that.

- I am surprised there are not more people falling off dock ladders at low tide climbing down to their seiners. It is very hard to find slip-side moorage. The harbor is very shallow and I have hit bottom often. Craig is a nice town but it is difficult and scary to tie up there.

- When heading north out of the harbor to the fuel dock, there is confusion on the rule: Red Right Return, you end up on the rocks if you follow the green cans leaving the harbor

- [Craig needs] not just restrooms but good clean shower facilities.

- The floating bridge was a nice addition – at first. But now it is just a MESS! A place to stretch out seines is great. Storage is great. But there must be rules and policy or the nicest facilities will soon resemble a garbage dump and be unusable.

- Dry winter boat storage would pay for itself.

- I think some kind of locker for skiff gas cans, oars, life jackets that cannot be left in an open skiff would be wonderful. We've had gas cans, etc. stolen several times.

- A large travel lift to handle 42-foot length and 16-foot wide and 36,000 pounds would be great.

- Not enough boat storage and haul out facilities for working on boats. Expanded boat storage would solve some of this. Having a drive down work float would make working on boats easier. Would keep more boats in Craig instead of having to go to Wrangell to have work done.

- Get rid of boats that haven't moved in 10 years

- Need more gear storage to get all the crap off the docks

- All four harbors and JT Brown Industrial Park should have skiff haulouts – sloped floats to run skiff up onto so you can pull the plug and our rain won't swamp or sink a skiff.

Moorage Fees:

- Costs are very high for 3-4 week moorage. I pay for an annual slip. Then someone else rents the same slip. I should have a discount when someone else leases the slip too.

- The most important thing to consider is price. If you don't keep moorage affordable you will drive boats away. This is what is happening in Sitka. Price is going up and I am looking elsewhere for a homeport. Wrangell and Craig are high on the list. If I can't afford the moorage I will have to leave the fishing industry and Alaska maybe.

- Prices for moorage and haulouts should be kept reasonable. This can be a burden on commercial boats. And our fish tax should be used to keep cost down to the commercial fleet and for harbor improvements for the fleet. The City should give back to the harbor at least 50 – 75% of this revenue and not continue to use it elsewhere.

- Please keep moorage fees down

- Lower rates for transient (if possible)

Docks:

- Many of the fastenings (nails) that hold the wood planks down on the dock are coming loose and sticking up. I feel this is dangerous to both the safety of the people on the dock and to personal property on the dock. I have seen repeated attempts to drive these nails back down, but after a short period of time they are sticking up again.

- Current docks are really in poor shape. Any improvement would be a great asset at Craig.

- The docks are presently very slick with algae, and there are a serious danger and should be dealt with. The harbormasters never seem to be around anymore. They had a much better presence under previous harbormaster.

- The bottom of the South Cove dock is in need of additional protection from bad south/west weather and the approach is in need of deepening.

- What is our harbormaster doing? Craig harbor looks awful. Docks listing, covered in algae, planks uneven, floats listing, broken hose outlets, broken or w/no working hose, no electricity near some areas – Klawock harbor looks clean and neat by comparison. Prioritizing work well is important in a job like that. Not sure if you picked the right person. Let's get it done! Clean it up, repair it, replace it.

Ice in harbor:

- Inner bay North Cove Harbor freezes up in winter and needs to be broken up when freezes so ice doesn't damage vessels. I would like to see more mid-size to large vessel moorage at the Ward Cove dock.

4. Use of new harbor site

- It would be nice to utilize that area. It's such a waste and is so well located.

- Ward Cove Cannery would be a good harbor for SE wind, but make sure you don't copy Sitka's design for the NW breakwater.

- I'm not convinced that the occasional delays during peak season at North/South Cove harbors justifies the development of the cannery property.

- The City cannot/does not maintain what we have. How will we take care of a bigger harbor? Better use for the money would be to dredge both sides of North Cove. I have hit bottom or had to wait several times.

- Even though we do not currently seek permanent moorage, it may be we would in the future if it were available.

- Please pursue harbor extensions. More space is needed.

- I would add water taxis and duck boat/whale watch trips/fish.

- Downtown moorage would be farther from the grocery store. More moorage would entice more transient boaters and overwinter transients.

- The west side of the island is growing with new residents. It would seem that enhanced facilities would be necessary. Hollis dock should be expanded as well.

- In 2012, the area of proposed development provided King Salmon fishing opportunities. Until the need becomes important, I think the City should hold off. My slip (permanent) continues to be used for transient when my boat is out of the water and there are slips available. That tells me we have space.

- The better the moorage situation in Craig, and the better the ice availability, and the better the fish delivery options to SPC, the more likely I would be to fish out of Craig.

- We love Craig harbor and hope to spend more time there. Most helpful would be permanent assigned slip availability and separate areas for large and small vessels (basically, harbor so congested during seiner openers it was difficult to get in/out, find slips and sleep at night). Also, if improving harbor facilities, more land-based housing (i.e. camper sites, weekly room rentals, showers/laundry, would be great for those of us there for the summer).

- Improvements at cannery site is an excellent plan to move the City into the 21st Century.

- I support expansion of the Craig facilities for commercial fisheries. Build it and business will come.

- Building a breakwater on Cannery Point would be the best thing for the entire north side docks in Craig since the floating breakwater was moored in its site.

- I would consider basing out of Craig instead of Wrangell or Ketchikan if I could get back to Ketchikan easier (ferry cost makes it worth my while to motor around a couple times a summer). I don't like leaving a truck unattended while fishing outside to get back and forth. To over winter, I'd want security for the boat in dry dock.

- My years of commercial fishing the City of Craig needs to expand its harbor facility to accept all permanent moorage with the ability to accommodate summer transient vessels.

- The new cannery location is much more suited for "storm" protection then "South Cove" my current location. I'm constantly changing lines and worried about my vessel in the gales of winter. This new harbor would open many more options for residents. I could sleep more comfortable knowing the boat is more secure.

- A new improved harbor is <u>much</u> needed. I also believe that city should expand city limits to include Point St. Nick to take advantage of the added tax base.

5. Current use of Craig Harbor

- I like to visit Craig in the summer and utilize their transient moorage for recreational boats.

- I use Craig Harbor for transient moorage/resupply several times during summers. I have/am considering dry land winter storage in Craig. If so my wet usage would still be occasional, but am interested in convenient in and out and dry land long term storage.

- Prefer transient moorage at North and South Harbors, closer to town for groceries, laundry, supplies, without car.

- Harbor use is highly variable depending on relative abundance of salmon in Area 4 purse seine fishery, however, I can see increased use in coming years.

- I own a seiner, fish around Craig usually in August. Additional moorage would be good for the overflow of seiners during closures. I usually tie up by JB Brown's Dock or the Old Fuel Dock.

- We make Craig our homeport June-September each year. Our groceries and supplies come from the town as does our recreation and leisure activity.

- For most of the time that I have been in the Craig area, I have been unable to tie to a dock but have anchored out in the harbor. I would be more inclined to be in the area if there were more facilities available.

- I use the Craig Harbor for the roe on kelp fishery. My harbor use is during the last half of March and first half of April.

- We have a dock at our house, but can't use it in winter due to exposure to wind and waves. We would likely just use the harbor in winter, or during storms. We are in the process of changing fisheries and more harbor space would help the process.

- Existing harbors could be MAINTAINED and UPGRADED truck ramp, electricity. This would meet the off season demand.

- The current harbor sizes might be inadequate, but that pales in comparison to the need for maintenance and infrastructure upgrades for our current facilities. Both North and South cove could really benefit from maintaining the current docks and as far as North cove where I moor my salmon-trolling vessel, the dock water supply has been failing for years as well as the electrical supply. Both systems are in dire need of upgrades. In addition North cove could benefits from dredging the existing channels to the east and west inside the harbor itself. During the summer months, when the seine fleet and a larger number of salmon-trollers are mooring here, it is sometimes not possible to enter and exit the harbor due to rafting-out vessels, low tides and shallows. Every year I've observed deeper draft vessels hitting bottom or running aground.

  It seems ludicrous for the City of Craig to request funding for a new harbor when they cannot adequately maintain their existing harbors. How do they expect to maintain a new facility? Furthermore the peak usage occurs in July and August only, so moorage revenue from transients would only be realized at that time. I've brought this up at the infrequent harbor advisory meetings we have. I see a new facility as a drain on the city's already inadequate revenues.

  On the other hand a harbor project would be good for employment (temporarily) in the community, but so would an infrastructure upgrade.

  So for what it's worth, save our federal tax dollars and spend them on something more worthwhile.

- The city should prioritize services for charter vessels because charter businesses generate tax revenue for the City of Craig.

- Craig is a good spot for me at times but would not be used in summer. Could look at winter moorage if it was larger and more updated and cost effective – occasionally there is not enough room even in the fall.