



APPENDIX F

BENEFIT-COST ANALYSIS



Memorandum

Date: August 8, 2023

To: Pat Cotter, RESPEC

From: Joey Lima, Northern Economics

RE: Kenai Peninsula Borough Land Planning Unit 395 Benefit-Cost Analysis

Abbreviations

BCA Benefit-Cost Analysis

KPB Kenai Peninsula Borough

RSA Road Service Area

Summary of Findings

In 2001, the Kenai Area Plan designated Unit 395 parcel as Settlement (for residential or residential and commercial use). The Kenai Area Plan stated that Unit 395 was potentially conveyable to the Kenai Peninsula Borough (KPB) for land management, but it wasn't until after the new Sterling Highway route was finalized in 2018 that management authority was conveyed to the KPB.

As part of the land planning process, KPB has partnered with local community and business partners to assess development opportunities for Unit 395, including residential, commercial, and mixed-use. The quantifiable scope of this analysis estimates the costs and benefits of developing two subdivisions and a materials extraction site. Potential benefits outside of the quantifiable scope of this cost-benefit analysis include additional residential and mixed-use developments, fees such as parking or other user fees from trailheads and cabins, concession and rental fees from public facilities, and benefits to nearby businesses from the additional population and recreational use in the area.

Using a discount rate of 7 percent, the net present value of project benefits is \$12.0 million, and costs are \$1.9 million. The KPB Land Planning Unit 395 project therefore has a benefit-cost ratio of 6.2, as shown in Table 1. The benefits by fund are shown in Table 2.

Table 1. Benefit-Cost Ratio

Category	Net Present Value (7% discount rate)
Benefits	
Sales of residential lots	\$10,914,515
Property tax receipts from residential lots sold	\$1,019,818
Royalties from material extraction	\$132,851
Total Benefits	\$12,067,184
Costs	
Construction of access road to southeast corner*	\$1,456,007
Construction of powerlines along access road*	\$410,000
Road Maintenance (RSA)	\$90,013
Total Costs	\$1,956,020
Benefit-Cost Ratio	6.2

Source: Northern Economics analysis

Note: * = Capital costs

Table 2. Benefits and Costs by Fund

Category	Benefit/Cost Source	Net Present Value (7% discount rate)
Benefits		
Land Trust Fund	Sales of residential lots & Royalties	\$11,047,365
KPB Road Service Area	RSA Tax Receipt	\$90,013
KPB General Fund	Property Tax Receipts	\$929,806
Total Benefits	Total Benefits	\$12,067,184
Costs		
Land Trust Fund	Construction of access road and Powerlines	\$1,866,007
KPB Road Service Area	Road Maintenance (RSA)	\$90,013
KPB General Fund	N/A	0
Total Costs	Total Costs	\$1,956,020

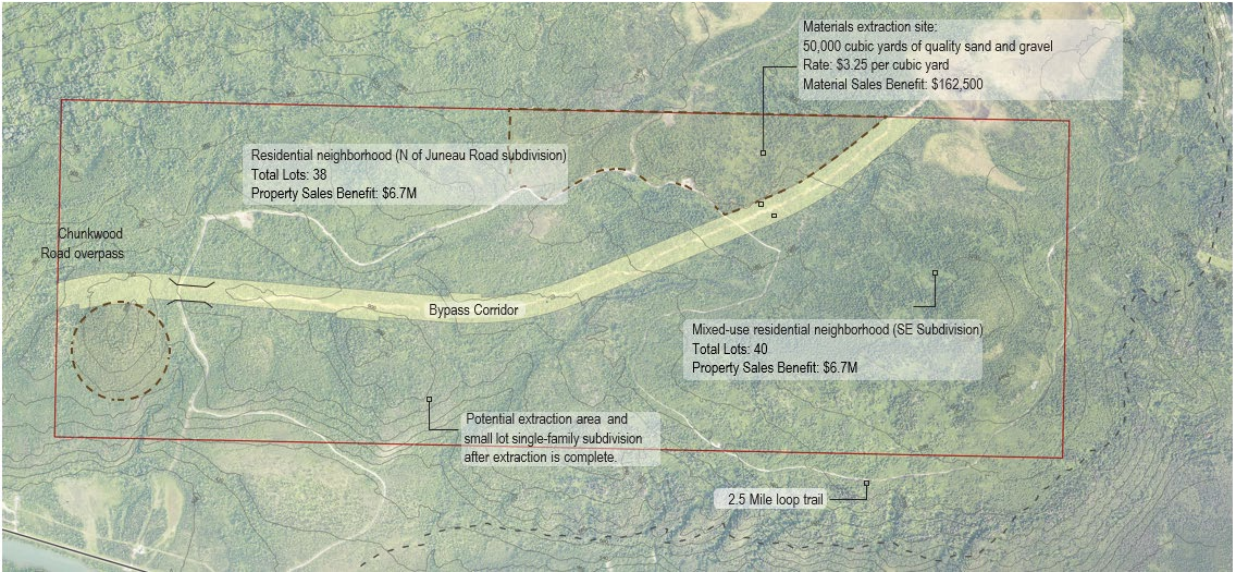
Source: Northern Economics analysis

Introduction

Cooper Landing has a population of just over 200 people and 297 housing units. According to the 2021 American Community Survey [U.S. Census Bureau, 2021], 212 of those housing units (71 percent) are vacant for seasonal, recreational, or occasional use, with only 85 reported as being occupied. The need for housing for year-round residents and seasonal workers who would like to be year-round residents was expressed repeatedly during the public engagement process for the Land Use Master Plan (RESPEC).

This analysis estimates the benefits of residential lot sales for two subdivisions over five years, royalties from a materials extraction site over three years, and property tax receipts over twenty years. Costs include one year capital expenses for access road construction and powerlines and a twenty year road maintenance period. The location and net present value of the three sites can be found in Figure 1.

Figure 1. Subdivisions and Materials Extraction Site Location



Source: Northern Economics updated map; based on Unit 395 Land Use Master Plan draft map

Benefits

The analysis period is 20 years with no residual value at the end of the period. The following sections describe the methodology for estimating the project benefits in each category, and the last section summarizes and discusses important qualitative issues.

Sales of Residential Lots

Two areas within Unit 395 have been identified as residential development areas within the next five years. The first subdivision is located in the southeast corner of Unit 395 and includes an estimated 40 lots with 0.92-acre lot sizes. The second subdivision is located north of West Juneau Road and includes an estimated 38 lots with 0.92-acre lot sizes. The current average lot price is \$150,000 based on the opinion of brokers and other sources familiar with the local market. This analysis assumes a starting lot sales price of \$150,000 per lot, with an increasing average lot price year over year for five years as supply decreases, until an average price of \$202,500 per lot for the remaining lots in year six. The weighted average lot price across both subdivisions between years one and six is estimated to be \$171,795, which is slightly higher than the current average of \$150,000.

Volume of lot sales assumes capital expenses for road construction and powerlines are accounted for in the first year and sell at a relatively static rate for the remaining years (see Table 3).

Table 3. Annual Residential Lot Sales by Subdivision

Year	Avg. Lot Sales Price	Lots Available	Lots Sold	Total Sales	Cumulative Sales
Southeast Subdivision					
1	\$150,000	40	14	\$2,100,000	\$2,100,000
2	\$162,500	26	8	\$1,300,000	\$3,400,000
3	\$172,500	18	7	\$1,207,500	\$4,607,500
4	\$182,500	11	6	\$1,095,000	\$5,702,500
5	\$192,500	5	5	\$962,500	\$6,665,000
North of West Juneau Road Subdivision					
1	\$0	0	0	\$0	\$0
2	\$162,500	38	13	\$2,112,500	\$2,112,500
3	\$172,500	25	8	\$1,380,000	\$3,492,500
4	\$182,500	17	8	\$1,460,000	\$4,952,500
5	\$192,500	9	4	\$770,000	\$5,722,500
6	\$202,500	5	5	\$1,012,500	\$6,735,000

Property Tax Receipts from Residential Lots

With an effective mill rate of 9.58 for the Kenai Peninsula Borough (2022 Alaska Taxable), property tax receipts based on the assessed value of 78 residential lots are estimated to increase by \$20,000 in year two (for 14 lots sold assessed at a value of \$2.1M) to \$128,000 per year in years seven through twenty (for 78 lots sold assessed at a value of \$13.4M).

Over the twenty-year analysis period, the benefit from property tax receipts is estimated at \$2.2 million, with a net present value of \$1.0M. This is a conservative estimate that does not assume a year-over-year increase in assessed property values that is greater than the inflation rate.

Table 4. Property Tax Receipts

Year	Additional Assessed Value	Total Additional Assessed Value	Tax Receipts	Cumulative Tax Receipts
1	\$0	\$0	\$0	\$0
2	\$2,100,000	\$2,100,000	\$20,118	\$20,118
3	\$3,412,500	\$5,512,500	\$52,810	\$72,928
4	\$2,587,500	\$8,100,000	\$77,598	\$150,526
5	\$2,555,000	\$10,655,000	\$102,075	\$252,601
6	\$1,732,500	\$12,387,500	\$118,672	\$371,273
7	\$1,012,500	\$13,400,000	\$128,372	\$499,645
8	\$0	\$13,400,000	\$128,372	\$628,017
9	\$0	\$13,400,000	\$128,372	\$756,389
10	\$0	\$13,400,000	\$128,372	\$884,761
11	\$0	\$13,400,000	\$128,372	\$1,013,133
12	\$0	\$13,400,000	\$128,372	\$1,141,505
13	\$0	\$13,400,000	\$128,372	\$1,269,877
14	\$0	\$13,400,000	\$128,372	\$1,398,249
15	\$0	\$13,400,000	\$128,372	\$1,526,621
16	\$0	\$13,400,000	\$128,372	\$1,654,993
17	\$0	\$13,400,000	\$128,372	\$1,783,365
18	\$0	\$13,400,000	\$128,372	\$1,911,737
19	\$0	\$13,400,000	\$128,372	\$2,040,109
20	\$0	\$13,400,000	\$128,372	\$2,168,481

Royalties from Materials Extraction

An extraction site for quality sand and gravel has been identified in the northeast section of Unit 395. It is estimated that 50,000 cubic yards of material are available, which will be a source of supply to the area for three years. At a rate of \$3.25 per cubic yard, the total benefit of materials extraction is estimated to be \$162.5K (NPV \$132K).

Project Costs

The project costs include access road construction, powerline construction, and road maintenance. This analysis assumes that construction on the road and powerlines begins and completes in year 1. Because the road is new, maintenance costs are assumed to start incurring in year 3. This analysis assumes the road maintenance cost each year is equal to the RSA mill rate (1.4) for the Kenai Peninsula Borough.

Access road construction is based on engineer’s estimate and includes \$1.2M for construction and a 30% (\$336K) construction contingency, totaling to \$1.46M. Powerline costs of \$410K in year 1 are estimated based on constructing 20 powerlines at a per unit cost of \$20,500.

Costs either not incurred by the Kenai Peninsula Borough or not in scope for this analysis include:

- Construction of water/wastewater systems (private cost)
- Construction of subdivision roads (private cost)
- Bypass ramps (DOT&PF cost)
- Materials extraction site O&M
- West Juneau Road upgrades (assume no upgrade costs)

Table 5. Project Construction and Operating Costs

	Capital Costs		Operating Costs	Total
	Road Construction	Powerline Construction	Road Maintenance	
Total	\$1,456,007	\$410,000	\$192,098	\$2,058,104
NPV	\$1,456,007	\$410,000	\$90,013	\$1,956,019

Source: Estimates from KPB

Benefit-Cost Ratio

Using a discount rate of 7 percent, the net present value of project benefits is \$12.0 million, and costs are \$1.9 million. The KPB Land Planning Unit 395 project therefore has a benefit-cost ratio of 6.2, as shown in Table 6. The benefits by fund are shown in Table 2.

Table 6. Benefit-Cost Ratio

Category	Net Present Value (7% discount rate)
Benefits	
Sales of residential lots	\$10,914,515
Property tax receipts from residential lots sold	\$1,019,818
Royalties from material extraction	\$132,851
Total Benefits	\$12,067,184
Costs	
Construction of access road to southeast corner*	\$1,456,007
Construction of powerlines along access road*	\$410,000
Road Maintenance (RSA)	\$90,013
Total Costs	\$1,956,020
Benefit-Cost Ratio	6.2

Source: Northern Economics analysis

Notes: Capital costs*

References

- Alaska Department of Commerce, Community, and Economic Development (DCCED). 2023. 2022 Alaska Taxable. <https://www.commerce.alaska.gov/web/Portals/4/pub/OSA/taxable%20reports/2022%20Alaska%20Taxable%20Report.pdf> . Accessed on July 8, 2023.
- Kenai Peninsula Borough. 2023. Personal communication with Northern Economics. August 3, 2023.
- Kenai Peninsula Borough. 2023. Kenai Peninsula Borough Road Service Area Board FY2024 Budget Document.https://www.kpb.us/components/com_papyruslist/document.php?d=3185310.
- RESPEC. Unit 395 Land Use Master Plan. 2023. <https://www.unit395planning.com/plan-draft>. Accessed on August 3, 2023.