
New Seward Highway Rabbit Creek Road to 36th Avenue

**Environmental Assessment
Volume II, Appendixes**

Project Number: FRAF-CA-MGS-NH-0A3-1(27)/52503



**U.S. Department of Transportation,
Alaska Division of the Federal
Highway Administration,
and the Alaska Department of
Transportation and Public Facilities**

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APPENDIX A

Water Quality Sampling Data

TABLE A-1
Water Quality in the South Fork of Little Campbell Creek Upstream of New Seward Highway

Parameter	Units	07/28/ 2003	06/11/ 1986	06/25/ 1986	07/15/ 1986	07/29/ 1986	08/12/ 1986	08/26/ 1986	09/09/ 1986	09/25/ 1986	Water Quality Standard
Flow	ft ³ /s	0.365	1	0.7	0.9	0.78	1.1	1.4	2	3	None
Temperature	°C	15.7	7.5	12	11	10.5	10	9	8	2	May not exceed 20°C at any time ^a
pH	units	7.94	8.6	8.8	8.4	8.4	8.4	8.4	8.4	8	6.5 - 8.5 ^a
Specific Conductance	μS/cm	362	228	241	242	249	190	240	227	211	None
Dissolved Oxygen	mg/L	6.41	11.5	9.8	10.2	10.4	11.1	11.3	11.8	13.6	Dissolved oxygen must be greater than 7 mg/L in waters used by anadromous and resident fish ^a
Total Suspended Solids	mg/L	4.30	13	18	6	7	14	7	18	17	No measurable increase in concentration of settleable solids above natural conditions, as measured by the volumetric Imhoff cone method ^b
Total Dissolved Solids	mg/L	255	--	--	--	--	--	--	--	--	Total dissolved solids may not exceed 1,000 mg/L ^a
Hardness	mg/L	168	--	--	--	--	--	--	--	--	None
Chloride	mg/L	34.8	--	--	--	--	--	--	--	--	230 mg/L (fresh water chronic criterion for aquatic life) ^c
Dissolved Lead	μg/L	0.300	--	--	--	--	--	--	--	--	Water quality criteria for lead are hardness dependent, with the criterion for chronic, freshwater aquatic life being the most stringent. None of the lead concentrations shown exceed Alaska water quality standards ^c
Dissolved Zinc	μg/L	7.46	--	--	--	--	--	--	--	--	Water quality criteria for zinc are hardness dependent, with the criterion for chronic, freshwater aquatic life being the most stringent. None of the zinc concentrations shown exceed Alaska water quality standards ^c
Iron	μg/L	440	--	--	--	--	--	--	--	--	1,000 μg/L (fresh water chronic criterion for aquatic life) ^c

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Water Quality in the South Fork of Little Campbell Creek Upstream of New Seward Highway

Parameter	Units	07/28/ 2003	06/11/ 1986	06/25/ 1986	07/15/ 1986	07/29/ 1986	08/12/ 1986	08/26/ 1986	09/09/ 1986	09/25/ 1986	Water Quality Standard
Fecal Coliform ^d	colonies /100 mL	270	38	39	210	1,000	870	310	560	140*	In a 30-day period, the geometric mean of samples may not exceed 100 fecal coliform/100 mL, and not more than one sample, or more than 10% of the samples if there are more than 10 samples, may exceed 200 fecal coliform/100 mL ^b
Oil and Grease	mg/L	ND (5.3)	--	--	--	--	--	--	--	--	May not cause a film, sheen, or discoloration on the surface or floor of the waterbody or adjoining shorelines. Surface waters must be virtually free from floating oils. ^b
Ammonia as N	mg/L	0.101	--	--	--	--	--	--	--	--	Water quality criteria for ammonia are pH and temperature dependent, with the criterion for chronic, early salmonid life stage being the most stringent. None of the ammonia concentrations shown exceed Alaska water quality standards ^c
Nitrate as N	mg/L	0.244	--	--	--	--	--	--	--	--	1 mg/L ^e
Nitrate and Nitrite as N	mg/L	ND (0.50)	--	--	--	--	--	--	--	--	10 mg/L ^e

Notes:

Bolding indicates exceedances of the State of Alaska water quality standards.

July 2002 parameters measured directly upstream of New Seward Highway creek crossing; 1986 parameters measured at USGS Station #15274530 at Dimond Hook Drive.

^a State of Alaska Water Quality Standard for Growth and Propagation of Fish, Shellfish, Other Aquatic Life, and Wildlife in Fresh Water (18 AAC 70)

^b State of Alaska Water Quality Standard for Primary Contact Water Recreation for Fresh Water (18 AAC 70)

^c State of Alaska Water Quality Standard for Toxic and Other Deleterious Organic and Inorganic Substances (18 AAC 70)

^d 30-day periods used to calculate the geometric mean are as follows: 6/11/86-6/25/86, 7/15/86-8/12/86, and 8/26/86-9/25/86

^e State of Alaska Drinking Water Standards (18 AAC 80)

* Estimated Value

ND = Nondetect (method reporting limit shown in parenthesis)

(--) = Parameter Not Measured

TABLE A-2
Water Quality in the North Fork of Little Campbell Creek Upstream of New Seward Highway

Parameter	Units	07/28/ 2003	07/16/ 1986	07/29/ 1986	08/12/ 1986	08/26/ 1986	09/10/ 1986	09/25/ 1986	Water Quality Standard
Flow	ft ³ /s	0.314	0.16	0.17	2.02	1.69	0.25	0.47	None
Temperature	°C	13.5	15.0	10.9	10.1	8.8	7.8	4.0	May not exceed 20°C at any time ^a
pH	units	7.84	7.7	6.3	6.1	6.0	6.0	6.0	6.5 - 8.5 ^a
Specific Conductance	μS/cm	360	205	185	155	185	192	189	None
Dissolved Oxygen	mg/L	9.24	10.2	10.8	9.2	11.2	11.8	11.8	Dissolved oxygen must be greater than 7 mg/L in waters used by anadromous and resident fish ^a
Total Suspended Solids	mg/L	ND (4.0)	5.7	1.5	21	4.2	3.4	32	No measurable increase in concentration of settleable solids above natural conditions, as measured by the volumetric Imhoff cone method ^b
Total Dissolved Solids	mg/L	273	168	188	126	216	205	197	Total dissolved solids may not exceed 1,000 mg/L ^a
Hardness	mg/L	187	116	--	100	--	139	--	None
Chloride	mg/L	26.3	10	9.2	10	14	12	10	230 mg/L (freshwater chronic criterion for aquatic life) ^c
Dissolved Lead	μg/L	ND (0.10)	<2	--	<2	--	<2	--	Water quality criteria for lead are hardness dependent, with the criterion for chronic, freshwater aquatic life being the most stringent. None of the lead concentrations shown exceed Alaska water quality standards ^c
Dissolved Zinc	μg/L	7.12	24	--	56	--	120	--	Water quality criteria for zinc are hardness dependent, with the criterion for chronic, freshwater aquatic life being the most stringent. None of the zinc concentrations shown exceed Alaska water quality standards ^c
Iron	μg/L	1,100	1,100	--	1,500	--	1,100	--	1,000 μg/L (freshwater chronic criterion for aquatic life) ^c
Fecal Coliform ^d	colonies/ 100 mL	210	130	62	10,000	630	170	30	In a 30-day period, the geometric mean of samples may not exceed 100 fecal coliform/100 mL, and not more than one sample, or more than 10% of the samples if there are more than 10 samples, may exceed 200 fecal Coliform/100 mL ^b

TABLE A-2
Water Quality in the North Fork of Little Campbell Creek Upstream of New Seward Highway

Parameter	Units	07/28/ 2003	07/16/ 1986	07/29/ 1986	08/12/ 1986	08/26/ 1986	09/10/ 1986	09/25/ 1986	Water Quality Standard
Oil and Grease	mg/L	ND (5.3)	<5	--	1.9	--	<1	--	May not cause a film, sheen, or discoloration on the surface or floor of the waterbody or adjoining shorelines. Surface waters must be virtually free from floating oils. ^o
Ammonia as N	mg/L	ND (0.10)	--	--	--	--	--	--	Water quality criteria for ammonia are pH and temperature dependent, with the criterion for chronic, early salmonid life stage being the most stringent. None of the ammonia concentrations shown exceed Alaska water quality standards ^c
Nitrate as N	mg/L	0.373	0.28	0.27	0.28	0.34	0.31	0.38	1 mg/L ^e
Nitrate and Nitrite as N	mg/L	ND (0.50)	--	--	--	--	--	--	10 mg/L ^e

Notes:

Bolding indicates exceedances of the State of Alaska water quality standards.

July 2003 parameters measured directly upstream of New Seward Highway creek crossing; 1986 parameters measured at East 66th Avenue and O'Brien Street.

^a State of Alaska Water Quality Standard for Growth and Propagation of Fish, Shellfish, Other Aquatic Life, and Wildlife in Fresh Water (18 AAC 70)

^b State of Alaska Water Quality Standard for Primary Contact Water Recreation for Fresh Water (18 AAC 70)

^c State of Alaska Water Quality Standard for Toxic and Other Deleterious Organic and Inorganic Substances (18 AAC 70)

^d 30-day periods used to calculate the geometric mean are as follows: 7/16/86-8/12/86 and 8/26/86-9/25/86

^e State of Alaska Drinking Water Standards (18 AAC 80)

ND = Nondetect (method reporting limit shown in parenthesis)

(--) = Parameter Not Measured

TABLE A-3
Water Quality in Campbell Creek Upstream of New Seward Highway

Parameter	Units	7/28/ 2003	8/6/ 1999	8/11/ 1999	9/17/ 1999	3/16/ 2000	6/2/ 2000	8/9/ 2000	8/9/ 2000	Water Quality Standard
Flow	ft ³ /s	52.2	71	64	101	13	78		92	None
Temperature	°C	11.6	11.5	11.5	6.5	0	5	9	8.9	May not exceed 20°C at any time ^a
pH	units	8.13	7.9		7.4	7.4	7.6	7.7	7.7	6.5 - 8.5 ^a
Specific Conductance	μS/cm	91	103	95	89	108	84	90	90	None
Dissolved Oxygen	mg/L	11.64	10.2	--	12	14.3	11.6	11.8	11.8	Dissolved oxygen must be greater than 7 mg/L in waters used by anadromous and resident fish ^a
Total Suspended Solids	mg/L	ND (4.0)	--	--	--	1	8	--	5	No measurable increase in concentration of settleable solids above natural conditions, as measured by the volumetric Imhoff cone method ^b
Total Dissolved Solids	mg/L	68.2	--	--	--	--	--	--	--	Total dissolved solids may not exceed 1,000 mg/L ^a
Hardness	mg/L	49.8	--	--	--	--	--	--	--	None
Chloride	mg/L	ND (0.50)	< 0.1	--	--	0.8	0.6	--	0.4	230 mg/L (freshwater chronic criterion for aquatic life) ^c
Dissolved Lead	μg/L	ND (0.10)	--	--	--	--	--	--	--	Water quality criteria for lead are hardness dependent, with the criterion for chronic, freshwater aquatic life being the most stringent. None of the lead concentrations shown exceed Alaska water quality standards. ^c
Dissolved Zinc	μg/L	1.37	--	--	--	--	--	--	--	Water quality criteria for zinc are hardness dependent, with the criterion for chronic, freshwater aquatic life being the most stringent. None of the zinc concentrations shown exceed Alaska water quality standards. ^c
Iron	μg/L	169	30	--	--	40	30	--	M	1,000 μg/L (freshwater chronic criterion for aquatic life). ^c

TABLE A-3
Water Quality in Campbell Creek Upstream of New Seward Highway

Parameter	Units	7/28/ 2003	8/6/ 1999	8/11/ 1999	9/17/ 1999	3/16/ 2000	6/2/ 2000	8/9/ 2000	8/9/ 2000	Water Quality Standard
Fecal Coliform	colonies/ 100 mL	55	--	--	--	E 5	E 9	--	--	In a 30-day period, the geometric mean of samples may not exceed 100 fecal coliform/100 mL, and not more than one sample, or more than 10% of the samples if there are more than 10 samples, may exceed 200 fecal coliform/100 mL. ^b
Oil and Grease	mg/L	ND (5.3)	--	--	--	--	--	--	--	May not cause a film, sheen, or discoloration on the surface or floor of the waterbody or adjoining shorelines. Surface waters must be virtually free from floating oils. ^b
Ammonia as N	mg/L	ND (0.10)	0.004	--	--	< 0.002	< 0.002	--	0.011	Water quality criteria for ammonia are pH and temperature dependent, with the criterion for chronic, early salmonid life stage being the most stringent. None of the ammonia concentrations shown exceed Alaska water quality standards. ^c
Nitrate as N	mg/L	0.107	0.001	--	--	< 0.001	< 0.001	--	0.001	1 mg/L ^d
Nitrate and Nitrite as N	mg/L	ND (0.50)	0.098	--	--	0.38	0.527	--	0.12	10 mg/L ^d

Notes:

July 2003 parameters measured directly upstream of New Seward Highway creek crossing; 1999-2000 parameters measured at USGS Station #15274395 at New Seward Highway.

^a State of Alaska Water Quality Standard for Growth and Propagation of Fish, Shellfish, Other Aquatic Life, and Wildlife in Fresh Water (18 AAC 70)

^b State of Alaska Water Quality Standard for Primary Contact Water Recreation for Fresh Water (18 AAC 70)

^c State of Alaska Water Quality Standard for Toxic and Other Deleterious Organic and Inorganic Substances (18 AAC 70)

^d State of Alaska Drinking Water Standards (18 AAC 80)

^e – Estimated value

M - Presence of material verified but not quantified

ND = Nondetect (method reporting limit shown in parenthesis)

(--) = Parameter Not Measured