Appendix A

National Wildlife Refuge System Strategic Goals

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National Wildlife Refuge System Strategic Goals

1. Conserve Manage, and Where Appropriate, Restore Fish, Wildlife and Plant Resources and Their Habitats to Fulfill Refuge Purposes, Trust Resource Responsibilities, and Biological Diversity/Integrity.
2. Provide Quality Environments with Adequate Water.
3. Ensure that Unique Values of Wilderness, other Special Designation Areas, and Cultural Resources are protected.
4. Welcome and Orient Visitors.
5. Provide Quality Wildlife Dependent Recreation and Education Opportunities.
6. Facilitate Partnerships and Cooperative Projects to Engage Other Conservation Agencies, Volunteers, Friends, and Partners in the Refuge System Mission.
7. Protect Resources and Visitors through Law Enforcement.
8. Provide Infrastructure and Equipment Adequate to Support Mission and Maintained in Good Condition.
9. Complete Quality and Useful Comprehensive Conservation Plans on Schedule and with Full Engagement of Partners.
10. Strategically Grow the System.
11. Reduce Wildfire Risks and Improve Habitats.
12. Promote and Enhance Organizational Excellence.

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Appendix B

Service Asset Maintenance Management System (SAMMS) Charts

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Refuge Transportation Service Asset Management System Summary

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Asset: 40760100 Roads Paved

Inventory Summary:

The inventory is distributed across the region as follows:

ID	Natl. Wildlife Refuge	Lane Miles	Count	Replace Value
74500	Alaska Maritime	0.00	0	$0
74512	Alaska Peninsula	0.00	0	$0
75600	Arctic	0.00	0	$0
74515	Becharof	0.00	0	$0
75605	Innoko	0.00	0	$0
74520	Izembek	0.00	0	$0
75610	Kanuti	0.00	0	$0
74525	Kenai	6.71	11	$9,590,600
74530	Kodiak	0.00	0	$0
75615	Koyukuk	0.00	0	$0
75621	Nowitna	0.00	0	$0
75625	Selawik	0.00	0	$0
75630	Tetlin	1.01	1	$1,401,822
74535	Togiak	0.00	0	$0
74540	Yukon Delta	0.00	0	$0
75635	Yukon Flats	0.00	0	$0
	Total:	7.72	12	$10,992,422

Class	FCI Range
Excellent	<=.10
Good	.10 - .15
Fair	.15 - .50
Poor	.50 - .70
Failed	> .70

Condition:

These assets have the following accumulated deferred maintenance and are in the condition class noted

ID	Natl. Wildlife Refuge	Deferred Maint.
74500	Alaska Maritime	$0
74512	Alaska Peninsula	$0
75600	Arctic	$0
74515	Becharof	$0
75605	Innoko	$0
74520	Izembek	$0
75610	Kanuti	$0
74525	Kenai	$0
74530	Kodiak	$0
75615	Koyukuk	$0
75621	Nowitna	$0
75625	Selawik	$0
75630	Tetlin	$0
74535	Togiak	$0
74540	Yukon Delta	$0
75635	Yukon Flats	$0
	Total:	$0
	Summary FCI (DM/CRV)	0.00

High Priority (API>=60) - Condition Class (Lane Miles)

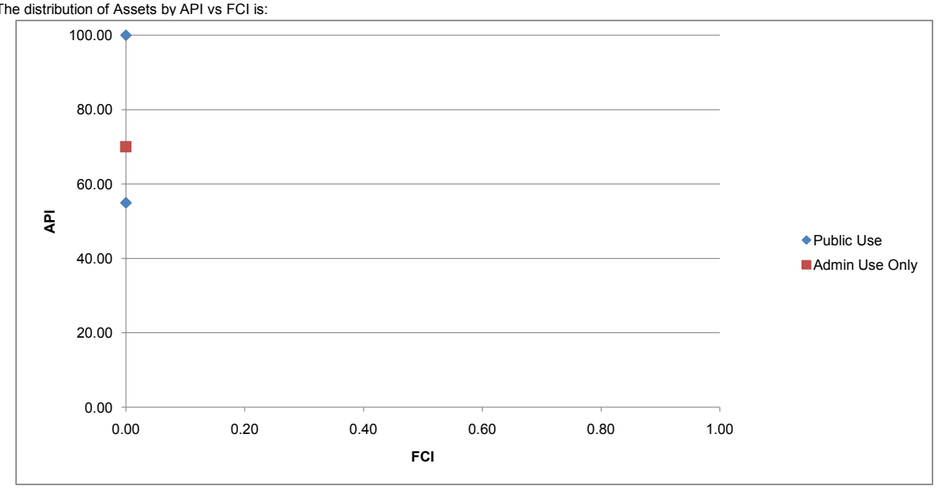
ID	Natl. Wildlife Refuge	Excellent	Good	Fair	Poor	Failed	Total
74500	Alaska Maritime	0.00	0.00	0.00	0.00	0.00	0.00
74512	Alaska Peninsula	0.00	0.00	0.00	0.00	0.00	0.00
75600	Arctic	0.00	0.00	0.00	0.00	0.00	0.00
74515	Becharof	0.00	0.00	0.00	0.00	0.00	0.00
75605	Innoko	0.00	0.00	0.00	0.00	0.00	0.00
74520	Izembek	0.00	0.00	0.00	0.00	0.00	0.00
75610	Kanuti	0.00	0.00	0.00	0.00	0.00	0.00
74525	Kenai	3.26	0.00	0.00	0.00	0.00	3.26
74530	Kodiak	0.00	0.00	0.00	0.00	0.00	0.00
75615	Koyukuk	0.00	0.00	0.00	0.00	0.00	0.00
75621	Nowitna	0.00	0.00	0.00	0.00	0.00	0.00
75625	Selawik	0.00	0.00	0.00	0.00	0.00	0.00
75630	Tetlin	1.01	0.00	0.00	0.00	0.00	1.01
74535	Togiak	0.00	0.00	0.00	0.00	0.00	0.00
74540	Yukon Delta	0.00	0.00	0.00	0.00	0.00	0.00
75635	Yukon Flats	0.00	0.00	0.00	0.00	0.00	0.00
	Total:	4.27	0.00	0.00	0.00	0.00	4.27
		100%	0%	0%	0%	0%	

Low Priority (API<60) - Condition Class (Lane Miles)

Natl. Wildlife Refuge	Excellent	Good	Fair	Poor	Failed	Total
Alaska Maritime	0.00	0.00	0.00	0.00	0.00	0.00
Alaska Peninsula	0.00	0.00	0.00	0.00	0.00	0.00
Arctic	0.00	0.00	0.00	0.00	0.00	0.00
Becharof	0.00	0.00	0.00	0.00	0.00	0.00
Innoko	0.00	0.00	0.00	0.00	0.00	0.00
Izembek	0.00	0.00	0.00	0.00	0.00	0.00
Kanuti	0.00	0.00	0.00	0.00	0.00	0.00
Kenai	3.45	0.00	0.00	0.00	0.00	3.45
Kodiak	0.00	0.00	0.00	0.00	0.00	0.00
Koyukuk	0.00	0.00	0.00	0.00	0.00	0.00
Nowitna	0.00	0.00	0.00	0.00	0.00	0.00
Selawik	0.00	0.00	0.00	0.00	0.00	0.00
Tetlin	0.00	0.00	0.00	0.00	0.00	0.00
Togiak	0.00	0.00	0.00	0.00	0.00	0.00
Yukon Delta	0.00	0.00	0.00	0.00	0.00	0.00
Yukon Flats	0.00	0.00	0.00	0.00	0.00	0.00
Total:	3.45	0.00	0.00	0.00	0.00	3.45
	100%	0%	0%	0%	0%	

Investment Strategy:

The distribution of Assets by API vs FCI is:



Fish and Wildlife Service - Refuge Transportation Asset Summary

FWS Region 7 Core Refuge Transportation Assets

Refuge	Roads (Paved) Lane Miles	Roads (Dirt) Lane Miles	Roads (Gravel) Lane Miles	Parking Lot Count	Trails (Paved) Length in LNFT	Trails (Unpaved) Length in LNFT	Boardwalks Length in LNFT	Bridges (Trail) Count	Bridges (Culvert) Count	Bridges (Road) Count	Docks (Floating) Count	Docks (Stationary) Count	Airstrips Count
Alaska Maritime	0	0	0	0	0	0	0	0	0	0	0	0	0
Alaska Peninsula	0	0	3	1	0	0	0	0	0	0	0	0	1
Arctic	0	0	0	0	0	0	0	0	0	0	0	0	1
Becharof	0	0	0	0	0	0	0	0	0	0	0	0	0
Innoko	0	0	0	1	0	0	0	0	0	0	0	0	0
Izembek	0	8	63	17	0	0	0	0	0	143	0	0	0
Kanuti	0	0	0	0	0	0	0	0	0	0	0	0	0
Kenai	7	27	102	65	3,784	758,659	2,733	67	0	0	2	1	0
Kodiak	0	0	0	1	0	0	0	0	0	0	0	0	0
Koyukuk	0	0	0	0	0	0	0	0	0	0	0	0	0
Nowitna	0	0	0	0	0	0	0	0	0	0	0	0	0
Selawik	0	0	0	0	0	0	800	0	0	0	0	0	0
Tetlin	1	0	6	4	0	138,960	0	0	0	0	0	1	0
Togiak	0	0	0	0	0	20,390	0	0	0	0	0	0	0
Yukon Delta	0	0	0	0	0	0	1,563	0	0	0	0	0	1
Yukon Flats	0	0	0	1	0	0	0	0	0	0	0	0	0
Total	**8**	**35**	**173**	**90**	**3,784**	**918,009**	**5,096**	**67**	0	**143**	**2**	**2**	**3**
Total DM	$0	**$14,423,736**	**$248,095,716**	**$27,724,561**	**$420,582**	**$30,254,771**	**$3,349,111**	**$209,744**	$0	**$1,919,916**	**$24,505**	**$829,182**	**$9,709,862**

High Priority Asset Condition (API >= 60)

Refuge	Roads (Paved)	Roads (Dirt)	Roads (Gravel)	Parking Lot	Trails (Paved)	Trails (Unpaved)	Boardwalks	Bridges (Trail)	Bridges (Culvert)	Bridges (Road)	Docks (Floating)	Docks (Stationary)	Airstrips
Excellent	100%	86%	96%	89%	NA	75%	50%	100%	NA	100%	100%	100%	100%
Good	0%	0%	0%	4%	NA	13%	25%	0%	NA	0%	0%	0%	0%
Fair	0%	0%	1%	6%	NA	0%	0%	0%	NA	0%	0%	0%	0%
Poor	0%	0%	0%	0%	NA	0%	0%	0%	NA	0%	0%	0%	0%
Failed	0%	14%	3%	1%	NA	13%	25%	0%	NA	0%	0%	0%	0%

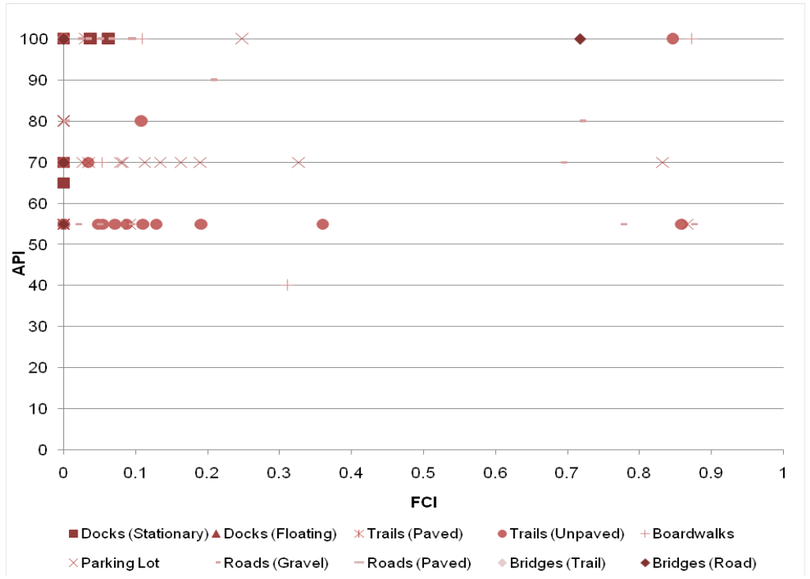
Low Priority Asset Condition (API < 60)

Refuge	Roads (Paved)	Roads (Dirt)	Roads (Gravel)	Parking Lot	Trails (Paved)	Trails (Unpaved)	Boardwalks	Bridges (Trail)	Bridges (Culvert)	Bridges (Road)	Docks (Floating)	Docks (Stationary)	Airstrips
Excellent	100%	100%	99%	96%	83%	88%	75%	100%	NA	NA	NA	NA	NA
Good	0%	0%	0%	0%	0%	5%	0%	0%	NA	NA	NA	NA	NA
Fair	0%	0%	0%	0%	0%	5%	25%	0%	NA	NA	NA	NA	NA
Poor	0%	0%	0%	0%	0%	0%	0%	0%	NA	NA	NA	NA	NA
Failed	0%	0%	1%	4%	17%	2%	0%	0%	NA	NA	NA	NA	NA

Major Asset Summary

	Quantity	Units
Road	216	Lane Miles
Trail*	926,889	Miles
Bridges (Road and Trail)	210	Each
Parking Lot	90	Count
Docks	4	Count
Airstrip	3	Count

** Includes boardwalks*



Asset: 40760300 Roads Dirt

Inventory Summary:

The inventory is distributed across the region as follows:

ID	Natl. Wildlife Refuge	Lane Miles	Count	Replace Value
74500	Alaska Maritime	0.00	0	$0
74512	Alaska Peninsula	0.00	0	$0
75600	Arctic	0.00	0	$0
74515	Becharof	0.00	0	$0
75605	Innoko	0.00	0	$0
74520	Izembek	7.92	7	$13,711,787
75610	Kanuti	0.00	0	$0
74525	Kenai	26.87	3	$711,949
74530	Kodiak	0.00	0	$0
75615	Koyukuk	0.00	0	$0
75621	Nowitna	0.00	0	$0
75625	Selawik	0.00	0	$0
75630	Tetlin	0.00	0	$0
74535	Togiak	0.00	0	$0
74540	Yukon Delta	0.00	0	$0
75635	Yukon Flats	0.00	0	$0
	Total:	34.79	10	$14,423,736

Class	FCI Range
Excellent	<=.10
Good	.10 - .15
Fair	.15 - .50
Poor	.50 - .70
Failed	> .70

Condition:

These assets have the following accumulated deferred maintenance and are in the condition class noted

ID	Natl. Wildlife Refuge	Deferred Maint.
74500	Alaska Maritime	$0
74512	Alaska Peninsula	$0
75600	Arctic	$0
74515	Becharof	$0
75605	Innoko	$0
74520	Izembek	$5,726,056
75610	Kanuti	$0
74525	Kenai	$0
74530	Kodiak	$0
75615	Koyukuk	$0
75621	Nowitna	$0
75625	Selawik	$0
75630	Tetlin	$0
74535	Togiak	$0
74540	Yukon Delta	$0
75635	Yukon Flats	$0
	Total:	$5,726,056
	Summary FCI (DM/CRV)	0.40

High Priority (API>=60) - Condition Class (Lane Miles)

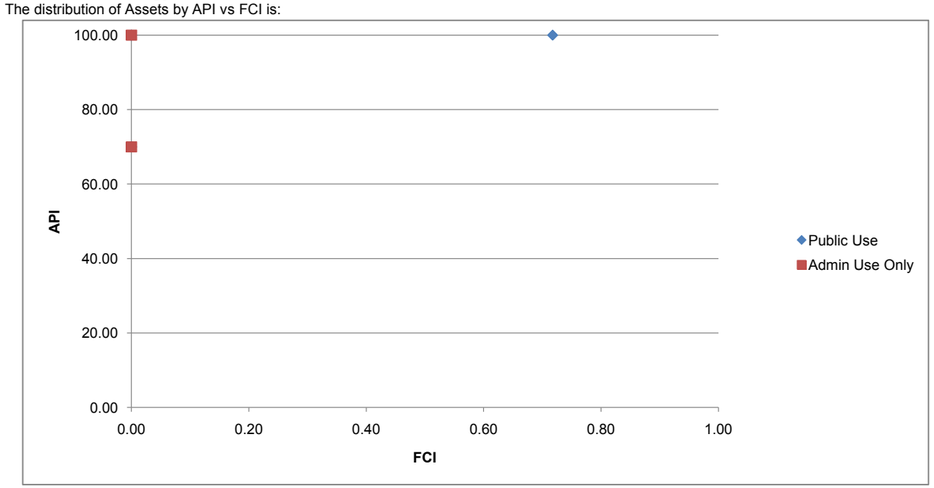
ID	Natl. Wildlife Refuge	Excellent	Good	Fair	Poor	Failed	Total
74500	Alaska Maritime	0.00	0.00	0.00	0.00	0.00	0.00
74512	Alaska Peninsula	0.00	0.00	0.00	0.00	0.00	0.00
75600	Arctic	0.00	0.00	0.00	0.00	0.00	0.00
74515	Becharof	0.00	0.00	0.00	0.00	0.00	0.00
75605	Innoko	0.00	0.00	0.00	0.00	0.00	0.00
74520	Izembek	3.31	0.00	0.00	0.00	4.61	7.92
75610	Kanuti	0.00	0.00	0.00	0.00	0.00	0.00
74525	Kenai	25.07	0.00	0.00	0.00	0.00	25.07
74530	Kodiak	0.00	0.00	0.00	0.00	0.00	0.00
75615	Koyukuk	0.00	0.00	0.00	0.00	0.00	0.00
75621	Nowitna	0.00	0.00	0.00	0.00	0.00	0.00
75625	Selawik	0.00	0.00	0.00	0.00	0.00	0.00
75630	Tetlin	0.00	0.00	0.00	0.00	0.00	0.00
74535	Togiak	0.00	0.00	0.00	0.00	0.00	0.00
74540	Yukon Delta	0.00	0.00	0.00	0.00	0.00	0.00
75635	Yukon Flats	0.00	0.00	0.00	0.00	0.00	0.00
	Total:	28.38	0.00	0.00	0.00	4.61	32.99
		86%	0%	0%	0%	14%	

Low Priority (API<60) - Condition Class (Lane Miles)

Natl. Wildlife Refuge	Excellent	Good	Fair	Poor	Failed	Total
Alaska Maritime	0.00	0.00	0.00	0.00	0.00	0.00
Alaska Peninsula	0.00	0.00	0.00	0.00	0.00	0.00
Arctic	0.00	0.00	0.00	0.00	0.00	0.00
Becharof	0.00	0.00	0.00	0.00	0.00	0.00
Innoko	0.00	0.00	0.00	0.00	0.00	0.00
Izembek	0.00	0.00	0.00	0.00	0.00	0.00
Kanuti	0.00	0.00	0.00	0.00	0.00	0.00
Kenai	1.80	0.00	0.00	0.00	0.00	1.80
Kodiak	0.00	0.00	0.00	0.00	0.00	0.00
Koyukuk	0.00	0.00	0.00	0.00	0.00	0.00
Nowitna	0.00	0.00	0.00	0.00	0.00	0.00
Selawik	0.00	0.00	0.00	0.00	0.00	0.00
Tetlin	0.00	0.00	0.00	0.00	0.00	0.00
Togiak	0.00	0.00	0.00	0.00	0.00	0.00
Yukon Delta	0.00	0.00	0.00	0.00	0.00	0.00
Yukon Flats	0.00	0.00	0.00	0.00	0.00	0.00
Total:	1.80	0.00	0.00	0.00	0.00	1.80
	100%	0%	0%	0%	0%	

Investment Strategy:

The distribution of Assets by API vs FCI is:



Asset: 40760200 Roads Gravel

Inventory Summary:

The inventory is distributed across the region as follows:

ID	Natl. Wildlife Refuge	Lane Miles	Count	Replace Value
74500	Alaska Maritime	0.00	0	$0
74512	Alaska Peninsula	2.50	2	$4,482,457
75600	Arctic	0.00	0	$0
74515	Becharof	0.00	0	$0
75605	Innoko	0.00	0	$0
74520	Izembek	62.65	16	$90,694,185
75610	Kanuti	0.00	0	$0
74525	Kenai	101.81	26	$144,611,671
74530	Kodiak	0.00	0	$0
75615	Koyukuk	0.00	0	$0
75621	Nowitna	0.00	0	$0
75625	Selawik	0.00	0	$0
75630	Tetlin	6.18	3	$8,307,403
74535	Togiak	0.00	0	$0
74540	Yukon Delta	0.00	0	$0
75635	Yukon Flats	0.00	0	$0
	Total:	173.14	47	$248,095,716

Class	FCI Range
Excellent	<=.10
Good	.10 - .15
Fair	.15 - .50
Poor	.50 - .70
Failed	> .70

Condition:

These assets have the following accumulated deferred maintenance and are in the condition class noted

ID	Natl. Wildlife Refuge	Deferred Maint.
74500	Alaska Maritime	$0
74512	Alaska Peninsula	$0
75600	Arctic	$0
74515	Becharof	$0
75605	Innoko	$0
74520	Izembek	$9,977,225
75610	Kanuti	$0
74525	Kenai	$2,461,249
74530	Kodiak	$0
75615	Koyukuk	$0
75621	Nowitna	$0
75625	Selawik	$0
75630	Tetlin	$742,500
74535	Togiak	$0
74540	Yukon Delta	$0
75635	Yukon Flats	$0
	Total:	$13,180,974
	Summary FCI (DM/CRV)	0.05

High Priority (API>=60) - Condition Class (Lane Miles)

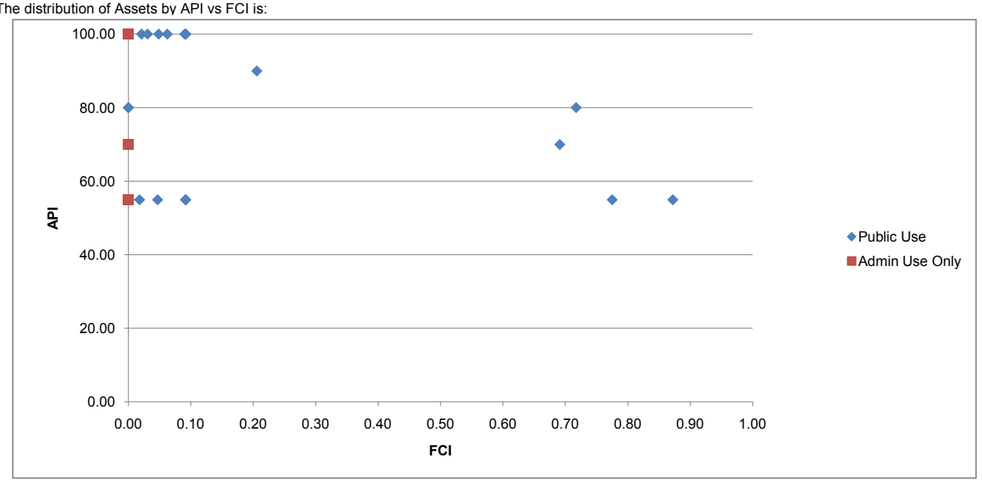
ID	Natl. Wildlife Refuge	Excellent	Good	Fair	Poor	Failed	Total
74500	Alaska Maritime	0.00	0.00	0.00	0.00	0.00	0.00
74512	Alaska Peninsula	2.50	0.00	0.00	0.00	0.00	2.50
75600	Arctic	0.00	0.00	0.00	0.00	0.00	0.00
74515	Becharof	0.00	0.00	0.00	0.00	0.00	0.00
75605	Innoko	0.00	0.00	0.00	0.00	0.00	0.00
74520	Izembek	59.24	0.00	0.00	0.00	3.41	62.65
75610	Kanuti	0.00	0.00	0.00	0.00	0.00	0.00
74525	Kenai	64.44	0.00	0.00	0.18	0.00	64.62
74530	Kodiak	0.00	0.00	0.00	0.00	0.00	0.00
75615	Koyukuk	0.00	0.00	0.00	0.00	0.00	0.00
75621	Nowitna	0.00	0.00	0.00	0.00	0.00	0.00
75625	Selawik	0.00	0.00	0.00	0.00	0.00	0.00
75630	Tetlin	4.18	0.00	2.00	0.00	0.00	6.18
74535	Togiak	0.00	0.00	0.00	0.00	0.00	0.00
74540	Yukon Delta	0.00	0.00	0.00	0.00	0.00	0.00
75635	Yukon Flats	0.00	0.00	0.00	0.00	0.00	0.00
	Total:	130.36	0.00	2.00	0.18	3.41	135.95
		96%	0%	1%	0%	3%	

Low Priority (API<60) - Condition Class (Lane Miles)

Natl. Wildlife Refuge	Excellent	Good	Fair	Poor	Failed	Total
Alaska Maritime	0.00	0.00	0.00	0.00	0.00	0.00
Alaska Peninsula	0.00	0.00	0.00	0.00	0.00	0.00
Arctic	0.00	0.00	0.00	0.00	0.00	0.00
Becharof	0.00	0.00	0.00	0.00	0.00	0.00
Innoko	0.00	0.00	0.00	0.00	0.00	0.00
Izembek	0.00	0.00	0.00	0.00	0.00	0.00
Kanuti	0.00	0.00	0.00	0.00	0.00	0.00
Kenai	36.91	0.00	0.00	0.00	0.28	37.19
Kodiak	0.00	0.00	0.00	0.00	0.00	0.00
Koyukuk	0.00	0.00	0.00	0.00	0.00	0.00
Nowitna	0.00	0.00	0.00	0.00	0.00	0.00
Selawik	0.00	0.00	0.00	0.00	0.00	0.00
Tetlin	0.00	0.00	0.00	0.00	0.00	0.00
Togiak	0.00	0.00	0.00	0.00	0.00	0.00
Yukon Delta	0.00	0.00	0.00	0.00	0.00	0.00
Yukon Flats	0.00	0.00	0.00	0.00	0.00	0.00
Total:	36.91	0.00	0.00	0.00	0.28	37.19
	99%	0%	0%	0%	1%	

Investment Strategy:

The distribution of Assets by API vs FCI is:



Asset: 40660100 Parking Lot

Inventory Summary:

The inventory is distributed across the region as follows:

ID	Natl. Wildlife Refuge	Size in SQYD	Count	Replace Value
74500	Alaska Maritime	0.00	0	$0
74512	Alaska Peninsula	8,333.33	1	$1,925,786
75600	Arctic	0.00	0	$0
74515	Becharof	0.00	0	$0
75605	Innoko	622.22	1	$165,908
74520	Izembek	14,649.81	17	$2,581,649
75610	Kanuti	0.00	0	$0
74525	Kenai	112,760.28	65	$19,640,478
74530	Kodiak	354.23	1	$705,073
75615	Koyukuk	0.00	0	$0
75621	Nowitna	0.00	0	$0
75625	Selawik	0.00	0	$0
75630	Tetlin	6,137.56	4	$1,532,715
74535	Togiak	0.00	0	$0
74540	Yukon Delta	0.00	0	$0
75635	Yukon Flats	5,888.89	1	$1,172,954
	Total:	148,746.32	90	$27,724,561

Class	FCI Range
Excellent	<=.10
Good	.10 - .15
Fair	.15 - .50
Poor	.50 - .70
Failed	> .70

Condition:

These assets have the following accumulated deferred maintenance and are in the condition class noted

ID	Natl. Wildlife Refuge	Deferred Maint.
74500	Alaska Maritime	$0
74512	Alaska Peninsula	$0
75600	Arctic	$0
74515	Becharof	$0
75605	Innoko	$0
74520	Izembek	$240,900
75610	Kanuti	$0
74525	Kenai	$632,229
74530	Kodiak	$0
75615	Koyukuk	$0
75621	Nowitna	$0
75625	Selawik	$0
75630	Tetlin	$0
74535	Togiak	$0
74540	Yukon Delta	$0
75635	Yukon Flats	$0
	Total:	$873,129
	Summary FCI (DM/CRV)	0.03

High Priority (API>=60) - Condition Class (Size in SQYD)

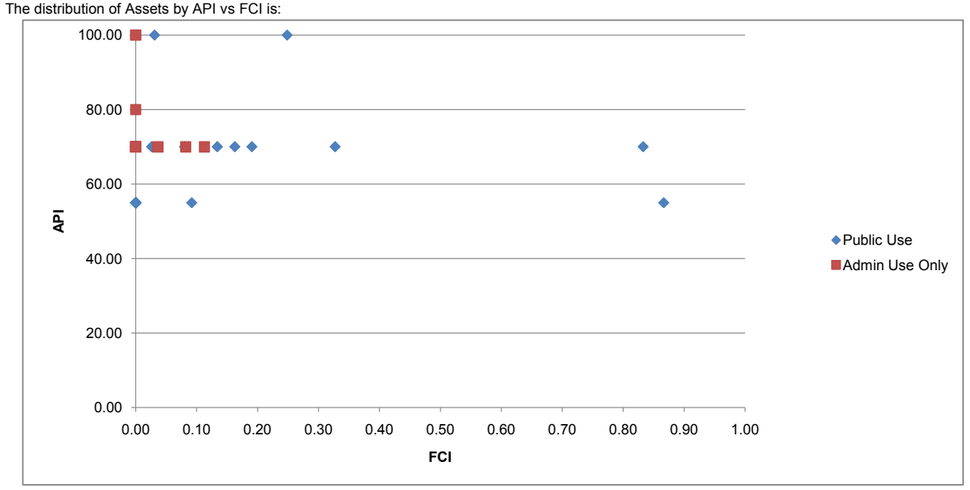
ID	Natl. Wildlife Refuge	Excellent	Good	Fair	Poor	Failed	Total
74500	Alaska Maritime	0.00	0.00	0.00	0.00	0.00	0.00
74512	Alaska Peninsula	8,333.33	0.00	0.00	0.00	0.00	8,333.33
75600	Arctic	0.00	0.00	0.00	0.00	0.00	0.00
74515	Becharof	0.00	0.00	0.00	0.00	0.00	0.00
75605	Innoko	622.22	0.00	0.00	0.00	0.00	622.22
74520	Izembek	10,414.15	0.00	3,402.33	0.00	833.33	14,649.81
75610	Kanuti	0.00	0.00	0.00	0.00	0.00	0.00
74525	Kenai	87,509.75	4,918.78	5,164.23	0.00	0.00	97,592.76
74530	Kodiak	354.23	0.00	0.00	0.00	0.00	354.23
75615	Koyukuk	0.00	0.00	0.00	0.00	0.00	0.00
75621	Nowitna	0.00	0.00	0.00	0.00	0.00	0.00
75625	Selawik	0.00	0.00	0.00	0.00	0.00	0.00
75630	Tetlin	6,137.56	0.00	0.00	0.00	0.00	6,137.56
74535	Togiak	0.00	0.00	0.00	0.00	0.00	0.00
74540	Yukon Delta	0.00	0.00	0.00	0.00	0.00	0.00
75635	Yukon Flats	5,888.89	0.00	0.00	0.00	0.00	5,888.89
	Total:	119,260.13	4,918.78	8,566.56	0.00	833.33	133,578.80
		89%	4%	6%	0%	1%	

Low Priority (API<60) - Condition Class (Size in SQYD)

Natl. Wildlife Refuge	Excellent	Good	Fair	Poor	Failed	Total
Alaska Maritime	0.00	0.00	0.00	0.00	0.00	0.00
Alaska Peninsula	0.00	0.00	0.00	0.00	0.00	0.00
Arctic	0.00	0.00	0.00	0.00	0.00	0.00
Becharof	0.00	0.00	0.00	0.00	0.00	0.00
Innoko	0.00	0.00	0.00	0.00	0.00	0.00
Izembek	0.00	0.00	0.00	0.00	0.00	0.00
Kanuti	0.00	0.00	0.00	0.00	0.00	0.00
Kenai	14,618.29	0.00	0.00	0.00	549.23	15,167.52
Kodiak	0.00	0.00	0.00	0.00	0.00	0.00
Koyukuk	0.00	0.00	0.00	0.00	0.00	0.00
Nowitna	0.00	0.00	0.00	0.00	0.00	0.00
Selawik	0.00	0.00	0.00	0.00	0.00	0.00
Tetlin	0.00	0.00	0.00	0.00	0.00	0.00
Togiak	0.00	0.00	0.00	0.00	0.00	0.00
Yukon Delta	0.00	0.00	0.00	0.00	0.00	0.00
Yukon Flats	0.00	0.00	0.00	0.00	0.00	0.00
Total:	14,618.29	0.00	0.00	0.00	549.23	15,167.52
	96%	0%	0%	0%	4%	

Investment Strategy:

The distribution of Assets by API vs FCI is:



Asset: 40751000 Trails Paved

Inventory Summary:

The inventory is distributed across the region as follows:

ID	Natl. Wildlife Refuge	Length in LNFT	Count	Replace Value
74500	Alaska Maritime	0.00	0	$0
74512	Alaska Peninsula	0.00	0	$0
75600	Arctic	0.00	0	$0
74515	Becharof	0.00	0	$0
75605	Innoko	0.00	0	$0
74520	Izembek	0.00	0	$0
75610	Kanuti	0.00	0	$0
74525	Kenai	3,784.00	6	$420,582
74530	Kodiak	0.00	0	$0
75615	Koyukuk	0.00	0	$0
75621	Nowitna	0.00	0	$0
75625	Selawik	0.00	0	$0
75630	Tetlin	0.00	0	$0
74535	Togiak	0.00	0	$0
74540	Yukon Delta	0.00	0	$0
75635	Yukon Flats	0.00	0	$0
	Total:	3,784.00	6	$420,582

Class	FCI Range
Excellent	<=.10
Good	.10 - .15
Fair	.15 - .50
Poor	.50 - .70
Failed	> .70

Condition:

These assets have the following accumulated deferred maintenance and are in the condition class noted

ID	Natl. Wildlife Refuge	Deferred Maint.
74500	Alaska Maritime	$0
74512	Alaska Peninsula	$0
75600	Arctic	$0
74515	Becharof	$0
75605	Innoko	$0
74520	Izembek	$0
75610	Kanuti	$0
74525	Kenai	$57,000
74530	Kodiak	$0
75615	Koyukuk	$0
75621	Nowitna	$0
75625	Selawik	$0
75630	Tetlin	$0
74535	Togiak	$0
74540	Yukon Delta	$0
75635	Yukon Flats	$0
	Total:	$57,000
	Summary FCI (DM/CRV)	0.14

High Priority (API>=60) - Condition Class (Length in LNFT)

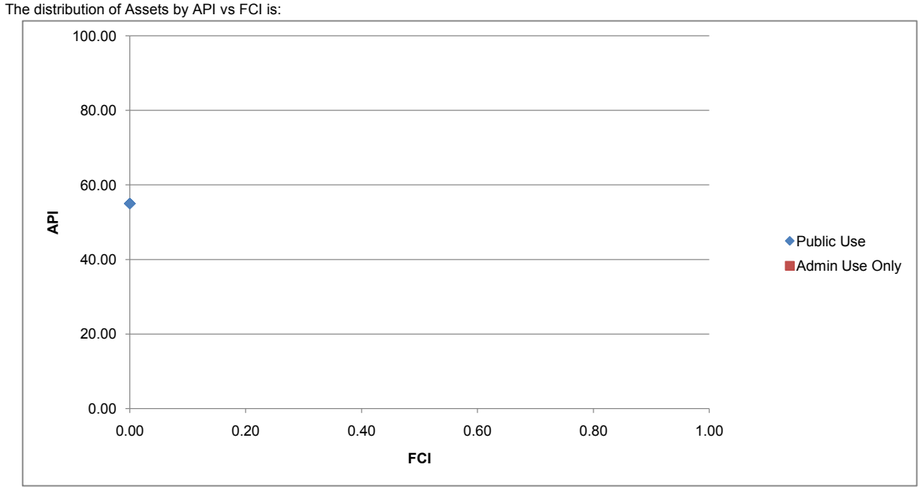
ID	Natl. Wildlife Refuge	Excellent	Good	Fair	Poor	Failed	Total
74500	Alaska Maritime	0.00	0.00	0.00	0.00	0.00	0.00
74512	Alaska Peninsula	0.00	0.00	0.00	0.00	0.00	0.00
75600	Arctic	0.00	0.00	0.00	0.00	0.00	0.00
74515	Becharof	0.00	0.00	0.00	0.00	0.00	0.00
75605	Innoko	0.00	0.00	0.00	0.00	0.00	0.00
74520	Izembek	0.00	0.00	0.00	0.00	0.00	0.00
75610	Kanuti	0.00	0.00	0.00	0.00	0.00	0.00
74525	Kenai	0.00	0.00	0.00	0.00	0.00	0.00
74530	Kodiak	0.00	0.00	0.00	0.00	0.00	0.00
75615	Koyukuk	0.00	0.00	0.00	0.00	0.00	0.00
75621	Nowitna	0.00	0.00	0.00	0.00	0.00	0.00
75625	Selawik	0.00	0.00	0.00	0.00	0.00	0.00
75630	Tetlin	0.00	0.00	0.00	0.00	0.00	0.00
74535	Togiak	0.00	0.00	0.00	0.00	0.00	0.00
74540	Yukon Delta	0.00	0.00	0.00	0.00	0.00	0.00
75635	Yukon Flats	0.00	0.00	0.00	0.00	0.00	0.00
	Total:	0.00	0.00	0.00	0.00	0.00	0.00
		NA	NA	NA	NA	NA	

Low Priority (API<60) - Condition Class (Length in LNFT)

Natl. Wildlife Refuge	Excellent	Good	Fair	Poor	Failed	Total
Alaska Maritime	0.00	0.00	0.00	0.00	0.00	0.00
Alaska Peninsula	0.00	0.00	0.00	0.00	0.00	0.00
Arctic	0.00	0.00	0.00	0.00	0.00	0.00
Becharof	0.00	0.00	0.00	0.00	0.00	0.00
Innoko	0.00	0.00	0.00	0.00	0.00	0.00
Izembek	0.00	0.00	0.00	0.00	0.00	0.00
Kanuti	0.00	0.00	0.00	0.00	0.00	0.00
Kenai	5.00	0.00	0.00	0.00	1.00	6.00
Kodiak	0.00	0.00	0.00	0.00	0.00	0.00
Koyukuk	0.00	0.00	0.00	0.00	0.00	0.00
Nowitna	0.00	0.00	0.00	0.00	0.00	0.00
Selawik	0.00	0.00	0.00	0.00	0.00	0.00
Tetlin	0.00	0.00	0.00	0.00	0.00	0.00
Togiak	0.00	0.00	0.00	0.00	0.00	0.00
Yukon Delta	0.00	0.00	0.00	0.00	0.00	0.00
Yukon Flats	0.00	0.00	0.00	0.00	0.00	0.00
Total:	5.00	0.00	0.00	0.00	1.00	6.00
	83%	0%	0%	0%	17%	

Investment Strategy:

The distribution of Assets by API vs FCI is:



Asset: 40751100 Trails Unpaved

Inventory Summary:

The inventory is distributed across the region as follows:

ID	Natl. Wildlife Refuge	Length in LNFT	Count	Replace Value
74500	Alaska Maritime	0.00	0	$0
74512	Alaska Peninsula	0.00	0	$0
75600	Arctic	0.00	0	$0
74515	Becharof	0.00	0	$0
75605	Innoko	0.00	0	$0
74520	Izembek	0.00	0	$0
75610	Kanuti	0.00	0	$0
74525	Kenai	758,659.00	42	$24,076,183
74530	Kodiak	0.00	0	$0
75615	Koyukuk	0.00	0	$0
75621	Nowitna	0.00	0	$0
75625	Selawik	0.00	0	$0
75630	Tetlin	138,960.00	6	$5,586,316
74535	Togiak	20,390.00	3	$592,272
74540	Yukon Delta	0.00	0	$0
75635	Yukon Flats	0.00	0	$0
	Total:	918,009.00	51	$30,254,771

Class	FCI Range
Excellent	<=.10
Good	.10 - .15
Fair	.15 - .50
Poor	.50 - .70
Failed	> .70

Condition:

These assets have the following accumulated deferred maintenance and are in the condition class noted

ID	Natl. Wildlife Refuge	Deferred Maint.
74500	Alaska Maritime	$0
74512	Alaska Peninsula	$0
75600	Arctic	$0
74515	Becharof	$0
75605	Innoko	$0
74520	Izembek	$0
75610	Kanuti	$0
74525	Kenai	$700,400
74530	Kodiak	$0
75615	Koyukuk	$0
75621	Nowitna	$0
75625	Selawik	$0
75630	Tetlin	$198,788
74535	Togiak	$0
74540	Yukon Delta	$0
75635	Yukon Flats	$0
	Total:	$899,188
	Summary FCI (DM/CRV)	0.03

High Priority (API>=60) - Condition Class (Length in LNFT)

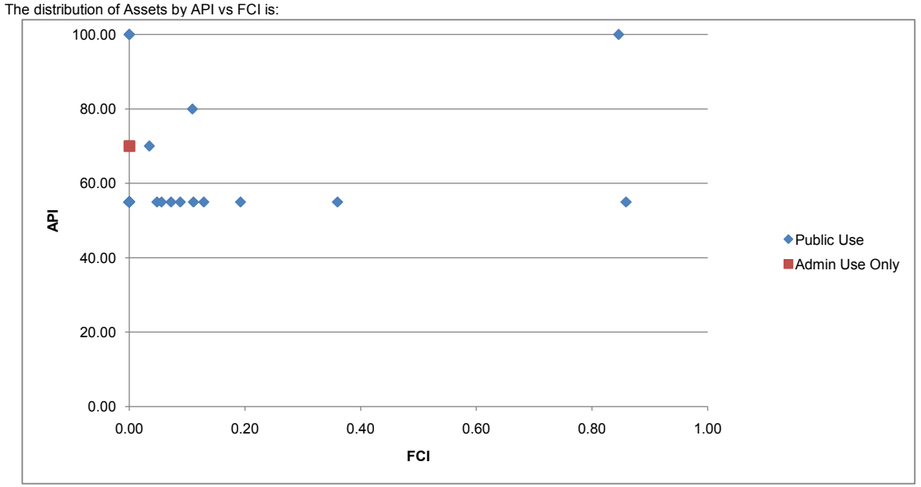
ID	Natl. Wildlife Refuge	Excellent	Good	Fair	Poor	Failed	Total
74500	Alaska Maritime	0.00	0.00	0.00	0.00	0.00	0.00
74512	Alaska Peninsula	0.00	0.00	0.00	0.00	0.00	0.00
75600	Arctic	0.00	0.00	0.00	0.00	0.00	0.00
74515	Becharof	0.00	0.00	0.00	0.00	0.00	0.00
75605	Innoko	0.00	0.00	0.00	0.00	0.00	0.00
74520	Izembek	0.00	0.00	0.00	0.00	0.00	0.00
75610	Kanuti	0.00	0.00	0.00	0.00	0.00	0.00
74525	Kenai	0.00	0.00	0.00	0.00	0.00	0.00
74530	Kodiak	0.00	0.00	0.00	0.00	0.00	0.00
75615	Koyukuk	0.00	0.00	0.00	0.00	0.00	0.00
75621	Nowitna	0.00	0.00	0.00	0.00	0.00	0.00
75625	Selawik	0.00	0.00	0.00	0.00	0.00	0.00
75630	Tetlin	3.00	1.00	0.00	0.00	1.00	5.00
74535	Togiak	3.00	0.00	0.00	0.00	0.00	3.00
74540	Yukon Delta	0.00	0.00	0.00	0.00	0.00	0.00
75635	Yukon Flats	0.00	0.00	0.00	0.00	0.00	0.00
	Total:	6.00	1.00	0.00	0.00	1.00	8.00
		75%	13%	0%	0%	13%	

Low Priority (API<60) - Condition Class (Length in LNFT)

Natl. Wildlife Refuge	Excellent	Good	Fair	Poor	Failed	Total
Alaska Maritime	0.00	0.00	0.00	0.00	0.00	0.00
Alaska Peninsula	0.00	0.00	0.00	0.00	0.00	0.00
Arctic	0.00	0.00	0.00	0.00	0.00	0.00
Becharof	0.00	0.00	0.00	0.00	0.00	0.00
Innoko	0.00	0.00	0.00	0.00	0.00	0.00
Izembek	0.00	0.00	0.00	0.00	0.00	0.00
Kanuti	0.00	0.00	0.00	0.00	0.00	0.00
Kenai	37.00	2.00	2.00	0.00	1.00	42.00
Kodiak	0.00	0.00	0.00	0.00	0.00	0.00
Koyukuk	0.00	0.00	0.00	0.00	0.00	0.00
Nowitna	0.00	0.00	0.00	0.00	0.00	0.00
Selawik	0.00	0.00	0.00	0.00	0.00	0.00
Tetlin	1.00	0.00	0.00	0.00	0.00	1.00
Togiak	0.00	0.00	0.00	0.00	0.00	0.00
Yukon Delta	0.00	0.00	0.00	0.00	0.00	0.00
Yukon Flats	0.00	0.00	0.00	0.00	0.00	0.00
Total:	38.00	2.00	2.00	0.00	1.00	43.00
	88%	5%	5%	0%	2%	

Investment Strategy:

The distribution of Assets by API vs FCI is:



Asset: 40751300 Boardwalks

Inventory Summary:

The inventory is distributed across the region as follows:

ID	Natl. Wildlife Refuge	Length in LNFT	Count	Replace Value
74500	Alaska Maritime	0.00	0	$0
74512	Alaska Peninsula	0.00	0	$0
75600	Arctic	0.00	0	$0
74515	Becharof	0.00	0	$0
75605	Innoko	0.00	0	$0
74520	Izembek	0.00	0	$0
75610	Kanuti	0.00	0	$0
74525	Kenai	2,733.00	5	$1,902,555
74530	Kodiak	0.00	0	$0
75615	Koyukuk	0.00	0	$0
75621	Nowitna	0.00	0	$0
75625	Selawik	800.00	1	$441,448
75630	Tetlin	0.00	0	$0
74535	Togiak	0.00	0	$0
74540	Yukon Delta	1,563.00	2	$1,005,108
75635	Yukon Flats	0.00	0	$0
	Total:	5,096.00	8	$3,349,111

Class	FCI Range
Excellent	<=.10
Good	.10 - .15
Fair	.15 - .50
Poor	.50 - .70
Failed	> .70

Condition:

These assets have the following accumulated deferred maintenance and are in the condition class noted

ID	Natl. Wildlife Refuge	Deferred Maint.
74500	Alaska Maritime	$0
74512	Alaska Peninsula	$0
75600	Arctic	$0
74515	Becharof	$0
75605	Innoko	$0
74520	Izembek	$0
75610	Kanuti	$0
74525	Kenai	$759,000
74530	Kodiak	$0
75615	Koyukuk	$0
75621	Nowitna	$0
75625	Selawik	$137,500
75630	Tetlin	$0
74535	Togiak	$0
74540	Yukon Delta	$35,000
75635	Yukon Flats	$0
	Total:	$931,500
	Summary FCI (DM/CRV)	0.28

High Priority (API>=60) - Condition Class (Length in LNFT)

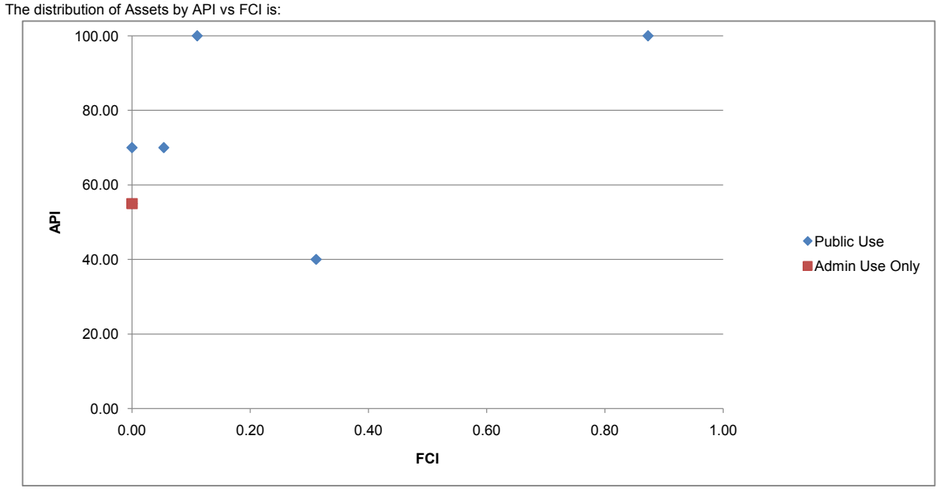
ID	Natl. Wildlife Refuge	Excellent	Good	Fair	Poor	Failed	Total
74500	Alaska Maritime	0.00	0.00	0.00	0.00	0.00	0.00
74512	Alaska Peninsula	0.00	0.00	0.00	0.00	0.00	0.00
75600	Arctic	0.00	0.00	0.00	0.00	0.00	0.00
74515	Becharof	0.00	0.00	0.00	0.00	0.00	0.00
75605	Innoko	0.00	0.00	0.00	0.00	0.00	0.00
74520	Izembek	0.00	0.00	0.00	0.00	0.00	0.00
75610	Kanuti	0.00	0.00	0.00	0.00	0.00	0.00
74525	Kenai	0.00	1.00	0.00	0.00	1.00	2.00
74530	Kodiak	0.00	0.00	0.00	0.00	0.00	0.00
75615	Koyukuk	0.00	0.00	0.00	0.00	0.00	0.00
75621	Nowitna	0.00	0.00	0.00	0.00	0.00	0.00
75625	Selawik	0.00	0.00	0.00	0.00	0.00	0.00
75630	Tetlin	0.00	0.00	0.00	0.00	0.00	0.00
74535	Togiak	0.00	0.00	0.00	0.00	0.00	0.00
74540	Yukon Delta	2.00	0.00	0.00	0.00	0.00	2.00
75635	Yukon Flats	0.00	0.00	0.00	0.00	0.00	0.00
	Total:	2.00	1.00	0.00	0.00	1.00	4.00
		50%	25%	0%	0%	25%	

Low Priority (API<60) - Condition Class (Length in LNFT)

Natl. Wildlife Refuge	Excellent	Good	Fair	Poor	Failed	Total
Alaska Maritime	0.00	0.00	0.00	0.00	0.00	0.00
Alaska Peninsula	0.00	0.00	0.00	0.00	0.00	0.00
Arctic	0.00	0.00	0.00	0.00	0.00	0.00
Becharof	0.00	0.00	0.00	0.00	0.00	0.00
Innoko	0.00	0.00	0.00	0.00	0.00	0.00
Izembek	0.00	0.00	0.00	0.00	0.00	0.00
Kanuti	0.00	0.00	0.00	0.00	0.00	0.00
Kenai	3.00	0.00	0.00	0.00	0.00	3.00
Kodiak	0.00	0.00	0.00	0.00	0.00	0.00
Koyukuk	0.00	0.00	0.00	0.00	0.00	0.00
Nowitna	0.00	0.00	0.00	0.00	0.00	0.00
Selawik	0.00	0.00	1.00	0.00	0.00	1.00
Tetlin	0.00	0.00	0.00	0.00	0.00	0.00
Togiak	0.00	0.00	0.00	0.00	0.00	0.00
Yukon Delta	0.00	0.00	0.00	0.00	0.00	0.00
Yukon Flats	0.00	0.00	0.00	0.00	0.00	0.00
Total:	3.00	0.00	1.00	0.00	0.00	4.00
	75%	0%	25%	0%	0%	

Investment Strategy:

The distribution of Assets by API vs FCI is:



Asset: 40760800 Trail Bridges

Inventory Summary:

The inventory is distributed across the region as follows:

ID	Natl. Wildlife Refuge	Size in SQYD	Count	Replace Value
74500	Alaska Maritime	0.00	0	$0
74512	Alaska Peninsula	0.00	0	$0
75600	Arctic	0.00	0	$0
74515	Becharof	0.00	0	$0
75605	Innoko	0.00	0	$0
74520	Izembek	0.00	0	$0
75610	Kanuti	0.00	0	$0
74525	Kenai	66.66	2	$209,744
74530	Kodiak	0.00	0	$0
75615	Koyukuk	0.00	0	$0
75621	Nowitna	0.00	0	$0
75625	Selawik	0.00	0	$0
75630	Tetlin	0.00	0	$0
74535	Togiak	0.00	0	$0
74540	Yukon Delta	0.00	0	$0
75635	Yukon Flats	0.00	0	$0
	Total:	66.66	2	$209,744

Class	FCI Range
Excellent	<=.10
Good	.10 - .15
Fair	.15 - .50
Poor	.50 - .70
Failed	> .70

Condition:

These assets have the following accumulated deferred maintenance and are in the condition class noted

ID	Natl. Wildlife Refuge	Deferred Maint.
74500	Alaska Maritime	$0
74512	Alaska Peninsula	$0
75600	Arctic	$0
74515	Becharof	$0
75605	Innoko	$0
74520	Izembek	$0
75610	Kanuti	$0
74525	Kenai	$0
74530	Kodiak	$0
75615	Koyukuk	$0
75621	Nowitna	$0
75625	Selawik	$0
75630	Tetlin	$0
74535	Togiak	$0
74540	Yukon Delta	$0
75635	Yukon Flats	$0
	Total:	$0
	Summary FCI (DM/CRV)	0.00

High Priority (API>=60) - Condition Class (Size in SQYD)

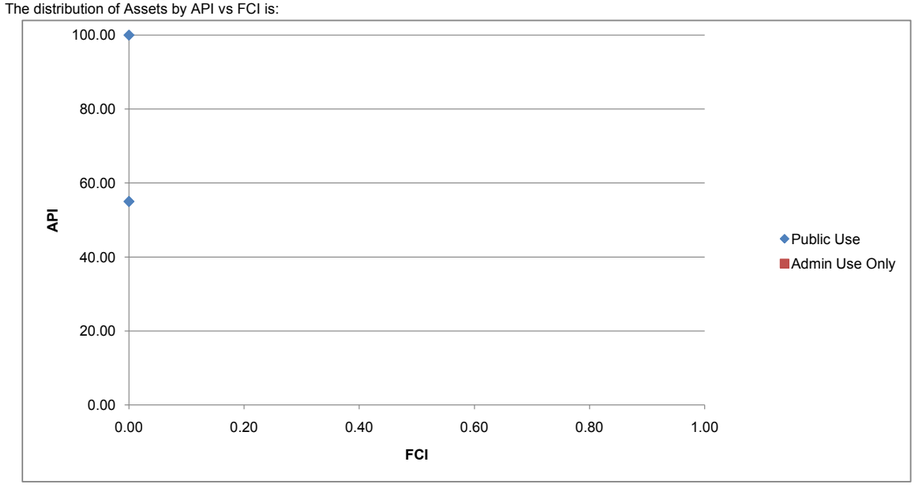
ID	Natl. Wildlife Refuge	Excellent	Good	Fair	Poor	Failed	Total
74500	Alaska Maritime	0.00	0.00	0.00	0.00	0.00	0.00
74512	Alaska Peninsula	0.00	0.00	0.00	0.00	0.00	0.00
75600	Arctic	0.00	0.00	0.00	0.00	0.00	0.00
74515	Becharof	0.00	0.00	0.00	0.00	0.00	0.00
75605	Innoko	0.00	0.00	0.00	0.00	0.00	0.00
74520	Izembek	0.00	0.00	0.00	0.00	0.00	0.00
75610	Kanuti	0.00	0.00	0.00	0.00	0.00	0.00
74525	Kenai	33.33	0.00	0.00	0.00	0.00	33.33
74530	Kodiak	0.00	0.00	0.00	0.00	0.00	0.00
75615	Koyukuk	0.00	0.00	0.00	0.00	0.00	0.00
75621	Nowitna	0.00	0.00	0.00	0.00	0.00	0.00
75625	Selawik	0.00	0.00	0.00	0.00	0.00	0.00
75630	Tetlin	0.00	0.00	0.00	0.00	0.00	0.00
74535	Togiak	0.00	0.00	0.00	0.00	0.00	0.00
74540	Yukon Delta	0.00	0.00	0.00	0.00	0.00	0.00
75635	Yukon Flats	0.00	0.00	0.00	0.00	0.00	0.00
	Total:	33.33	0.00	0.00	0.00	0.00	33.33
		100%	0%	0%	0%	0%	

Low Priority (API<60) - Condition Class (Size in SQYD)

Natl. Wildlife Refuge	Excellent	Good	Fair	Poor	Failed	Total
Alaska Maritime	0.00	0.00	0.00	0.00	0.00	0.00
Alaska Peninsula	0.00	0.00	0.00	0.00	0.00	0.00
Arctic	0.00	0.00	0.00	0.00	0.00	0.00
Becharof	0.00	0.00	0.00	0.00	0.00	0.00
Innoko	0.00	0.00	0.00	0.00	0.00	0.00
Izembek	0.00	0.00	0.00	0.00	0.00	0.00
Kanuti	0.00	0.00	0.00	0.00	0.00	0.00
Kenai	33.33	0.00	0.00	0.00	0.00	33.33
Kodiak	0.00	0.00	0.00	0.00	0.00	0.00
Koyukuk	0.00	0.00	0.00	0.00	0.00	0.00
Nowitna	0.00	0.00	0.00	0.00	0.00	0.00
Selawik	0.00	0.00	0.00	0.00	0.00	0.00
Tetlin	0.00	0.00	0.00	0.00	0.00	0.00
Togiak	0.00	0.00	0.00	0.00	0.00	0.00
Yukon Delta	0.00	0.00	0.00	0.00	0.00	0.00
Yukon Flats	0.00	0.00	0.00	0.00	0.00	0.00
Total:	33.33	0.00	0.00	0.00	0.00	33.33
	100%	0%	0%	0%	0%	

Investment Strategy:

The distribution of Assets by API vs FCI is:



Asset: 40760700 Culvert Road Bridge

Inventory Summary:

The inventory is distributed across the region as follows:

ID	Natl. Wildlife Refuge	Size in SQYD	Count	Replace Value
74500	Alaska Maritime	0.00	0	$0
74512	Alaska Peninsula	0.00	0	$0
75600	Arctic	0.00	0	$0
74515	Becharof	0.00	0	$0
75605	Innoko	0.00	0	$0
74520	Izembek	0.00	0	$0
75610	Kanuti	0.00	0	$0
74525	Kenai	0.00	0	$0
74530	Kodiak	0.00	0	$0
75615	Koyukuk	0.00	0	$0
75621	Nowitna	0.00	0	$0
75625	Selawik	0.00	0	$0
75630	Tetlin	0.00	0	$0
74535	Togiak	0.00	0	$0
74540	Yukon Delta	0.00	0	$0
75635	Yukon Flats	0.00	0	$0
	Total:	0.00	0	$0

Class	FCI Range
Excellent	<=.10
Good	.10 - .15
Fair	.15 - .50
Poor	.50 - .70
Failed	> .70

Condition:

These assets have the following accumulated deferred maintenance and are in the condition class noted

ID	Natl. Wildlife Refuge	Deferred Maint.
74500	Alaska Maritime	$0
74512	Alaska Peninsula	$0
75600	Arctic	$0
74515	Becharof	$0
75605	Innoko	$0
74520	Izembek	$0
75610	Kanuti	$0
74525	Kenai	$0
74530	Kodiak	$0
75615	Koyukuk	$0
75621	Nowitna	$0
75625	Selawik	$0
75630	Tetlin	$0
74535	Togiak	$0
74540	Yukon Delta	$0
75635	Yukon Flats	$0
	Total:	$0
	Summary FCI (DM/CRV)	#DIV/0!

High Priority (API>=60) - Condition Class (Size in SQYD)

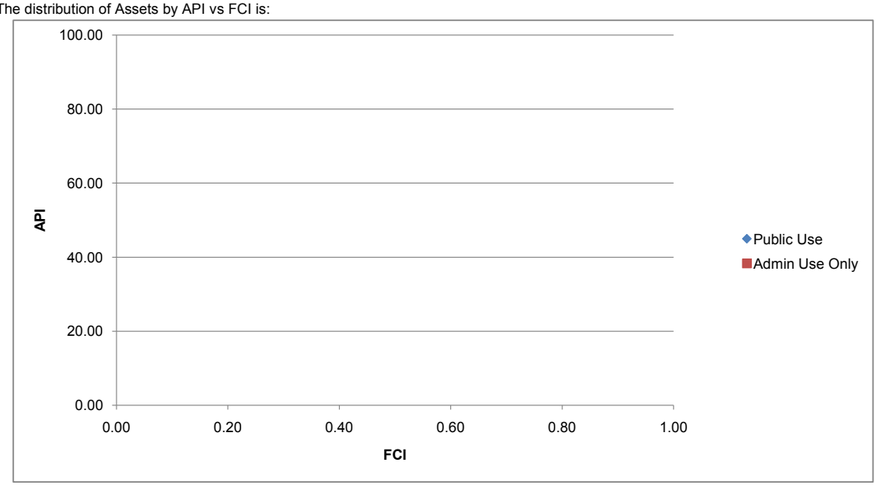
ID	Natl. Wildlife Refuge	Excellent	Good	Fair	Poor	Failed	Total
74500	Alaska Maritime	0.00	0.00	0.00	0.00	0.00	0.00
74512	Alaska Peninsula	0.00	0.00	0.00	0.00	0.00	0.00
75600	Arctic	0.00	0.00	0.00	0.00	0.00	0.00
74515	Becharof	0.00	0.00	0.00	0.00	0.00	0.00
75605	Innoko	0.00	0.00	0.00	0.00	0.00	0.00
74520	Izembek	0.00	0.00	0.00	0.00	0.00	0.00
75610	Kanuti	0.00	0.00	0.00	0.00	0.00	0.00
74525	Kenai	0.00	0.00	0.00	0.00	0.00	0.00
74530	Kodiak	0.00	0.00	0.00	0.00	0.00	0.00
75615	Koyukuk	0.00	0.00	0.00	0.00	0.00	0.00
75621	Nowitna	0.00	0.00	0.00	0.00	0.00	0.00
75625	Selawik	0.00	0.00	0.00	0.00	0.00	0.00
75630	Tetlin	0.00	0.00	0.00	0.00	0.00	0.00
74535	Togiak	0.00	0.00	0.00	0.00	0.00	0.00
74540	Yukon Delta	0.00	0.00	0.00	0.00	0.00	0.00
75635	Yukon Flats	0.00	0.00	0.00	0.00	0.00	0.00
	Total:	0.00	0.00	0.00	0.00	0.00	0.00
		NA	NA	NA	NA	NA	

Low Priority (API<60) - Condition Class (Size in SQYD)

Natl. Wildlife Refuge	Excellent	Good	Fair	Poor	Failed	Total
Alaska Maritime	0.00	0.00	0.00	0.00	0.00	0.00
Alaska Peninsula	0.00	0.00	0.00	0.00	0.00	0.00
Arctic	0.00	0.00	0.00	0.00	0.00	0.00
Becharof	0.00	0.00	0.00	0.00	0.00	0.00
Innoko	0.00	0.00	0.00	0.00	0.00	0.00
Izembek	0.00	0.00	0.00	0.00	0.00	0.00
Kanuti	0.00	0.00	0.00	0.00	0.00	0.00
Kenai	0.00	0.00	0.00	0.00	0.00	0.00
Kodiak	0.00	0.00	0.00	0.00	0.00	0.00
Koyukuk	0.00	0.00	0.00	0.00	0.00	0.00
Nowitna	0.00	0.00	0.00	0.00	0.00	0.00
Selawik	0.00	0.00	0.00	0.00	0.00	0.00
Tetlin	0.00	0.00	0.00	0.00	0.00	0.00
Togiak	0.00	0.00	0.00	0.00	0.00	0.00
Yukon Delta	0.00	0.00	0.00	0.00	0.00	0.00
Yukon Flats	0.00	0.00	0.00	0.00	0.00	0.00
Total:	0.00	0.00	0.00	0.00	0.00	0.00
	NA	NA	NA	NA	NA	

Investment Strategy:

The distribution of Assets by API vs FCI is:



Asset: 40760500 Road Bridges

Inventory Summary:

The inventory is distributed across the region as follows:

ID	Natl. Wildlife Refuge	Size in SQYD	Count	Replace Value
74500	Alaska Maritime	0.00	0	$0
74512	Alaska Peninsula	0.00	0	$0
75600	Arctic	0.00	0	$0
74515	Becharof	0.00	0	$0
75605	Innoko	0.00	0	$0
74520	Izembek	143.11	4	$1,919,916
75610	Kanuti	0.00	0	$0
74525	Kenai	0.00	0	$0
74530	Kodiak	0.00	0	$0
75615	Koyukuk	0.00	0	$0
75621	Nowitna	0.00	0	$0
75625	Selawik	0.00	0	$0
75630	Tetlin	0.00	0	$0
74535	Togiak	0.00	0	$0
74540	Yukon Delta	0.00	0	$0
75635	Yukon Flats	0.00	0	$0
	Total:	143.11	4	$1,919,916

Class	FCI Range
Excellent	<=.10
Good	.10 - .15
Fair	.15 - .50
Poor	.50 - .70
Failed	> .70

Condition:

These assets have the following accumulated deferred maintenance and are in the condition class noted

ID	Natl. Wildlife Refuge	Deferred Maint.
74500	Alaska Maritime	$0
74512	Alaska Peninsula	$0
75600	Arctic	$0
74515	Becharof	$0
75605	Innoko	$0
74520	Izembek	$0
75610	Kanuti	$0
74525	Kenai	$0
74530	Kodiak	$0
75615	Koyukuk	$0
75621	Nowitna	$0
75625	Selawik	$0
75630	Tetlin	$0
74535	Togiak	$0
74540	Yukon Delta	$0
75635	Yukon Flats	$0
	Total:	$0
	Summary FCI (DM/CRV)	0.00

High Priority (API>=60) - Condition Class (Size in SQYD)

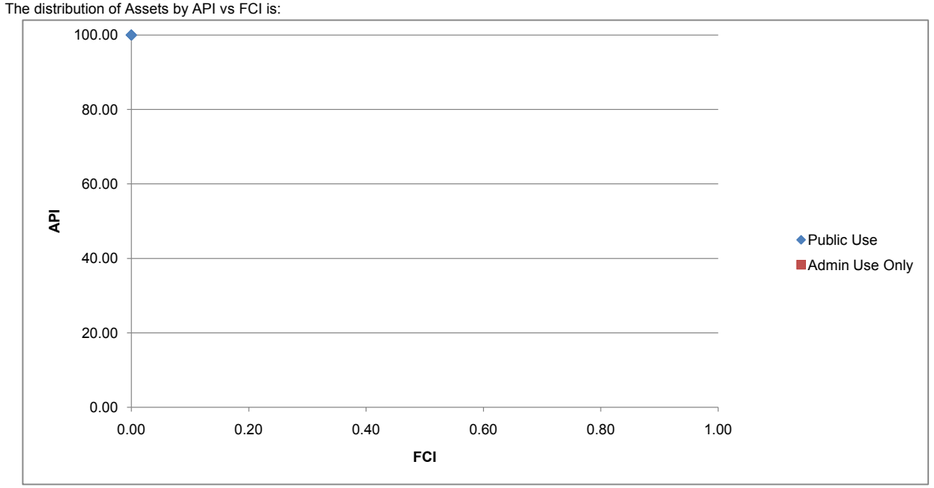
ID	Natl. Wildlife Refuge	Excellent	Good	Fair	Poor	Failed	Total
74500	Alaska Maritime	0.00	0.00	0.00	0.00	0.00	0.00
74512	Alaska Peninsula	0.00	0.00	0.00	0.00	0.00	0.00
75600	Arctic	0.00	0.00	0.00	0.00	0.00	0.00
74515	Becharof	0.00	0.00	0.00	0.00	0.00	0.00
75605	Innoko	0.00	0.00	0.00	0.00	0.00	0.00
74520	Izembek	143.11	0.00	0.00	0.00	0.00	143.11
75610	Kanuti	0.00	0.00	0.00	0.00	0.00	0.00
74525	Kenai	0.00	0.00	0.00	0.00	0.00	0.00
74530	Kodiak	0.00	0.00	0.00	0.00	0.00	0.00
75615	Koyukuk	0.00	0.00	0.00	0.00	0.00	0.00
75621	Nowitna	0.00	0.00	0.00	0.00	0.00	0.00
75625	Selawik	0.00	0.00	0.00	0.00	0.00	0.00
75630	Tetlin	0.00	0.00	0.00	0.00	0.00	0.00
74535	Togiak	0.00	0.00	0.00	0.00	0.00	0.00
74540	Yukon Delta	0.00	0.00	0.00	0.00	0.00	0.00
75635	Yukon Flats	0.00	0.00	0.00	0.00	0.00	0.00
	Total:	143.11	0.00	0.00	0.00	0.00	143.11
		100%	0%	0%	0%	0%	

Low Priority (API<60) - Condition Class (Size in SQYD)

Natl. Wildlife Refuge	Excellent	Good	Fair	Poor	Failed	Total
Alaska Maritime	0.00	0.00	0.00	0.00	0.00	0.00
Alaska Peninsula	0.00	0.00	0.00	0.00	0.00	0.00
Arctic	0.00	0.00	0.00	0.00	0.00	0.00
Becharof	0.00	0.00	0.00	0.00	0.00	0.00
Innoko	0.00	0.00	0.00	0.00	0.00	0.00
Izembek	0.00	0.00	0.00	0.00	0.00	0.00
Kanuti	0.00	0.00	0.00	0.00	0.00	0.00
Kenai	0.00	0.00	0.00	0.00	0.00	0.00
Kodiak	0.00	0.00	0.00	0.00	0.00	0.00
Koyukuk	0.00	0.00	0.00	0.00	0.00	0.00
Nowitna	0.00	0.00	0.00	0.00	0.00	0.00
Selawik	0.00	0.00	0.00	0.00	0.00	0.00
Tetlin	0.00	0.00	0.00	0.00	0.00	0.00
Togiak	0.00	0.00	0.00	0.00	0.00	0.00
Yukon Delta	0.00	0.00	0.00	0.00	0.00	0.00
Yukon Flats	0.00	0.00	0.00	0.00	0.00	0.00
Total:	0.00	0.00	0.00	0.00	0.00	0.00
	NA	NA	NA	NA	NA	

Investment Strategy:

The distribution of Assets by API vs FCI is:



Asset: 40130300 Docks Floating

Inventory Summary:

The inventory is distributed across the region as follows:

ID	Natl. Wildlife Refuge	Size in SQYD	Count	Replace Value
74500	Alaska Maritime	0.00	0	$0
74512	Alaska Peninsula	0.00	0	$0
75600	Arctic	0.00	0	$0
74515	Becharof	0.00	0	$0
75605	Innoko	0.00	0	$0
74520	Izembek	0.00	0	$0
75610	Kanuti	0.00	0	$0
74525	Kenai	27.11	2	$24,505
74530	Kodiak	0.00	0	$0
75615	Koyukuk	0.00	0	$0
75621	Nowitna	0.00	0	$0
75625	Selawik	0.00	0	$0
75630	Tetlin	0.00	0	$0
74535	Togiak	0.00	0	$0
74540	Yukon Delta	0.00	0	$0
75635	Yukon Flats	0.00	0	$0
	Total:	27.11	2	$24,505

Class	FCI Range
Excellent	<=.10
Good	.10 - .15
Fair	.15 - .50
Poor	.50 - .70
Failed	> .70

Condition:

These assets have the following accumulated deferred maintenance and are in the condition class noted

ID	Natl. Wildlife Refuge	Deferred Maint.
74500	Alaska Maritime	$0
74512	Alaska Peninsula	$0
75600	Arctic	$0
74515	Becharof	$0
75605	Innoko	$0
74520	Izembek	$0
75610	Kanuti	$0
74525	Kenai	$0
74530	Kodiak	$0
75615	Koyukuk	$0
75621	Nowitna	$0
75625	Selawik	$0
75630	Tetlin	$0
74535	Togiak	$0
74540	Yukon Delta	$0
75635	Yukon Flats	$0
	Total:	$0
	Summary FCI (DM/CRV)	0.00

High Priority (API>=60) - Condition Class (Size in SQYD)

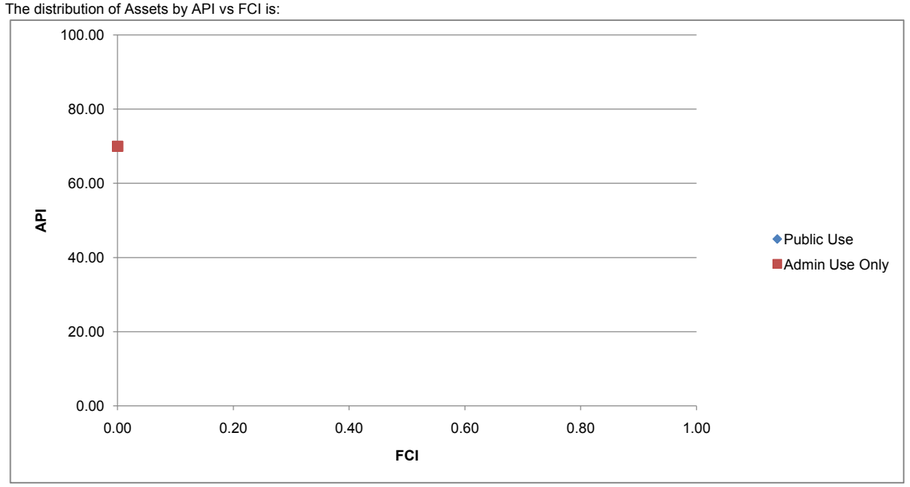
ID	Natl. Wildlife Refuge	Excellent	Good	Fair	Poor	Failed	Total
74500	Alaska Maritime	0.00	0.00	0.00	0.00	0.00	0.00
74512	Alaska Peninsula	0.00	0.00	0.00	0.00	0.00	0.00
75600	Arctic	0.00	0.00	0.00	0.00	0.00	0.00
74515	Becharof	0.00	0.00	0.00	0.00	0.00	0.00
75605	Innoko	0.00	0.00	0.00	0.00	0.00	0.00
74520	Izembek	0.00	0.00	0.00	0.00	0.00	0.00
75610	Kanuti	0.00	0.00	0.00	0.00	0.00	0.00
74525	Kenai	27.11	0.00	0.00	0.00	0.00	27.11
74530	Kodiak	0.00	0.00	0.00	0.00	0.00	0.00
75615	Koyukuk	0.00	0.00	0.00	0.00	0.00	0.00
75621	Nowitna	0.00	0.00	0.00	0.00	0.00	0.00
75625	Selawik	0.00	0.00	0.00	0.00	0.00	0.00
75630	Tetlin	0.00	0.00	0.00	0.00	0.00	0.00
74535	Togiak	0.00	0.00	0.00	0.00	0.00	0.00
74540	Yukon Delta	0.00	0.00	0.00	0.00	0.00	0.00
75635	Yukon Flats	0.00	0.00	0.00	0.00	0.00	0.00
	Total:	27.11	0.00	0.00	0.00	0.00	27.11
		100%	0%	0%	0%	0%	

Low Priority (API<60) - Condition Class (Size in SQYD)

Natl. Wildlife Refuge	Excellent	Good	Fair	Poor	Failed	Total
Alaska Maritime	0.00	0.00	0.00	0.00	0.00	0.00
Alaska Peninsula	0.00	0.00	0.00	0.00	0.00	0.00
Arctic	0.00	0.00	0.00	0.00	0.00	0.00
Becharof	0.00	0.00	0.00	0.00	0.00	0.00
Innoko	0.00	0.00	0.00	0.00	0.00	0.00
Izembek	0.00	0.00	0.00	0.00	0.00	0.00
Kanuti	0.00	0.00	0.00	0.00	0.00	0.00
Kenai	0.00	0.00	0.00	0.00	0.00	0.00
Kodiak	0.00	0.00	0.00	0.00	0.00	0.00
Koyukuk	0.00	0.00	0.00	0.00	0.00	0.00
Nowitna	0.00	0.00	0.00	0.00	0.00	0.00
Selawik	0.00	0.00	0.00	0.00	0.00	0.00
Tetlin	0.00	0.00	0.00	0.00	0.00	0.00
Togiak	0.00	0.00	0.00	0.00	0.00	0.00
Yukon Delta	0.00	0.00	0.00	0.00	0.00	0.00
Yukon Flats	0.00	0.00	0.00	0.00	0.00	0.00
Total:	0.00	0.00	0.00	0.00	0.00	0.00
	NA	NA	NA	NA	NA	

Investment Strategy:

The distribution of Assets by API vs FCI is:



Asset: 40130200 Docks Stationary

Inventory Summary:

The inventory is distributed across the region as follows:

ID	Natl. Wildlife Refuge	Size in SQFT	Count	Replace Value
74500	Alaska Maritime	0.00	0	$0
74512	Alaska Peninsula	0.00	0	$0
75600	Arctic	0.00	0	$0
74515	Becharof	0.00	0	$0
75605	Innoko	0.00	0	$0
74520	Izembek	0.00	0	$0
75610	Kanuti	0.00	0	$0
74525	Kenai	44.44	1	$67,877
74530	Kodiak	0.00	0	$0
75615	Koyukuk	0.00	0	$0
75621	Nowitna	0.00	0	$0
75625	Selawik	0.00	0	$0
75630	Tetlin	112.78	1	$761,305
74535	Togiak	0.00	0	$0
74540	Yukon Delta	0.00	0	$0
75635	Yukon Flats	0.00	0	$0
	Total:	157.22	2	$829,182

Class	FCI Range
Excellent	<=.10
Good	.10 - .15
Fair	.15 - .50
Poor	.50 - .70
Failed	> .70

Condition:

These assets have the following accumulated deferred maintenance and are in the condition class noted

ID	Natl. Wildlife Refuge	Deferred Maint.
74500	Alaska Maritime	$0
74512	Alaska Peninsula	$0
75600	Arctic	$0
74515	Becharof	$0
75605	Innoko	$0
74520	Izembek	$0
75610	Kanuti	$0
74525	Kenai	$0
74530	Kodiak	$0
75615	Koyukuk	$0
75621	Nowitna	$0
75625	Selawik	$0
75630	Tetlin	$48,014
74535	Togiak	$0
74540	Yukon Delta	$0
75635	Yukon Flats	$0
	Total:	$48,014
	Summary FCI (DM/CRV)	0.06

High Priority (API>=60) - Condition Class (Size in SQFT)

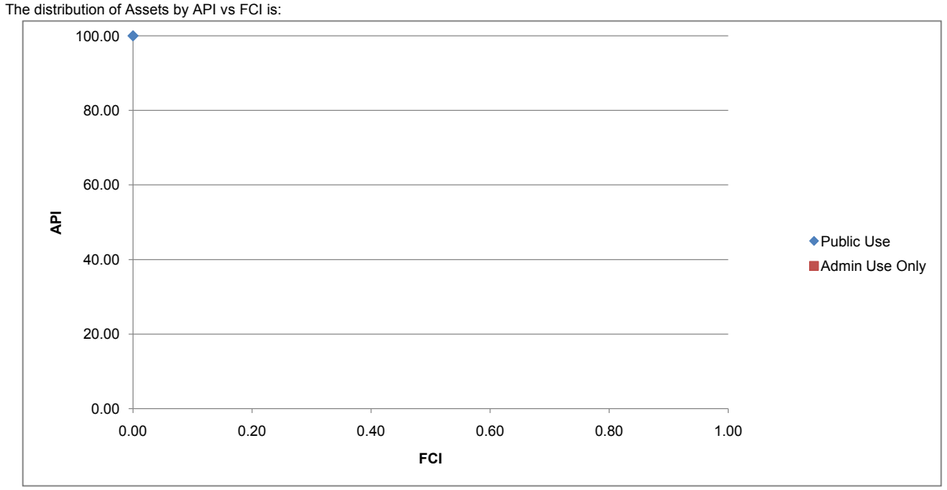
ID	Natl. Wildlife Refuge	Excellent	Good	Fair	Poor	Failed	Total
74500	Alaska Maritime	0.00	0.00	0.00	0.00	0.00	0.00
74512	Alaska Peninsula	0.00	0.00	0.00	0.00	0.00	0.00
75600	Arctic	0.00	0.00	0.00	0.00	0.00	0.00
74515	Becharof	0.00	0.00	0.00	0.00	0.00	0.00
75605	Innoko	0.00	0.00	0.00	0.00	0.00	0.00
74520	Izembek	0.00	0.00	0.00	0.00	0.00	0.00
75610	Kanuti	0.00	0.00	0.00	0.00	0.00	0.00
74525	Kenai	44.44	0.00	0.00	0.00	0.00	44.44
74530	Kodiak	0.00	0.00	0.00	0.00	0.00	0.00
75615	Koyukuk	0.00	0.00	0.00	0.00	0.00	0.00
75621	Nowitna	0.00	0.00	0.00	0.00	0.00	0.00
75625	Selawik	0.00	0.00	0.00	0.00	0.00	0.00
75630	Tetlin	112.78	0.00	0.00	0.00	0.00	112.78
74535	Togiak	0.00	0.00	0.00	0.00	0.00	0.00
74540	Yukon Delta	0.00	0.00	0.00	0.00	0.00	0.00
75635	Yukon Flats	0.00	0.00	0.00	0.00	0.00	0.00
	Total:	157.22	0.00	0.00	0.00	0.00	157.22
		100%	0%	0%	0%	0%	

Low Priority (API<60) - Condition Class (Size in SQFT)

Natl. Wildlife Refuge	Excellent	Good	Fair	Poor	Failed	Total
Alaska Maritime	0.00	0.00	0.00	0.00	0.00	0.00
Alaska Peninsula	0.00	0.00	0.00	0.00	0.00	0.00
Arctic	0.00	0.00	0.00	0.00	0.00	0.00
Becharof	0.00	0.00	0.00	0.00	0.00	0.00
Innoko	0.00	0.00	0.00	0.00	0.00	0.00
Izembek	0.00	0.00	0.00	0.00	0.00	0.00
Kanuti	0.00	0.00	0.00	0.00	0.00	0.00
Kenai	0.00	0.00	0.00	0.00	0.00	0.00
Kodiak	0.00	0.00	0.00	0.00	0.00	0.00
Koyukuk	0.00	0.00	0.00	0.00	0.00	0.00
Nowitna	0.00	0.00	0.00	0.00	0.00	0.00
Selawik	0.00	0.00	0.00	0.00	0.00	0.00
Tetlin	0.00	0.00	0.00	0.00	0.00	0.00
Togiak	0.00	0.00	0.00	0.00	0.00	0.00
Yukon Delta	0.00	0.00	0.00	0.00	0.00	0.00
Yukon Flats	0.00	0.00	0.00	0.00	0.00	0.00
Total:	0.00	0.00	0.00	0.00	0.00	0.00
	NA	NA	NA	NA	NA	

Investment Strategy:

The distribution of Assets by API vs FCI is:



Asset: 40120200 Airstrip

Inventory Summary:

The inventory is distributed across the region as follows:

ID	Natl. Wildlife Refuge	Size in SQYD	Count	Replace Value
74500	Alaska Maritime	0.00	0	$0
74512	Alaska Peninsula	41,666.67	1	$9,628,928
75600	Arctic	17,555.56	1	$40,746
74515	Becharof	0.00	0	$0
75605	Innoko	0.00	0	$0
74520	Izembek	0.00	0	$0
75610	Kanuti	0.00	0	$0
74525	Kenai	0.00	0	$0
74530	Kodiak	0.00	0	$0
75615	Koyukuk	0.00	0	$0
75621	Nowitna	0.00	0	$0
75625	Selawik	0.00	0	$0
75630	Tetlin	0.00	0	$0
74535	Togiak	0.00	0	$0
74540	Yukon Delta	5,666.67	1	$40,188
75635	Yukon Flats	0.00	0	$0
	Total:	64,888.90	3	$9,709,862

Class	FCI Range
Excellent	<=.10
Good	.10 - .15
Fair	.15 - .50
Poor	.50 - .70
Failed	> .70

Condition:

These assets have the following accumulated deferred maintenance and are in the condition class noted

ID	Natl. Wildlife Refuge	Deferred Maint.
74500	Alaska Maritime	$0
74512	Alaska Peninsula	$368,500
75600	Arctic	$0
74515	Becharof	$0
75605	Innoko	$0
74520	Izembek	$0
75610	Kanuti	$0
74525	Kenai	$0
74530	Kodiak	$0
75615	Koyukuk	$0
75621	Nowitna	$0
75625	Selawik	$0
75630	Tetlin	$0
74535	Togiak	$0
74540	Yukon Delta	$0
75635	Yukon Flats	$0
	Total:	$368,500
	Summary FCI (DM/CRV)	0.04

High Priority (API>=60) - Condition Class (Size in SQYD)

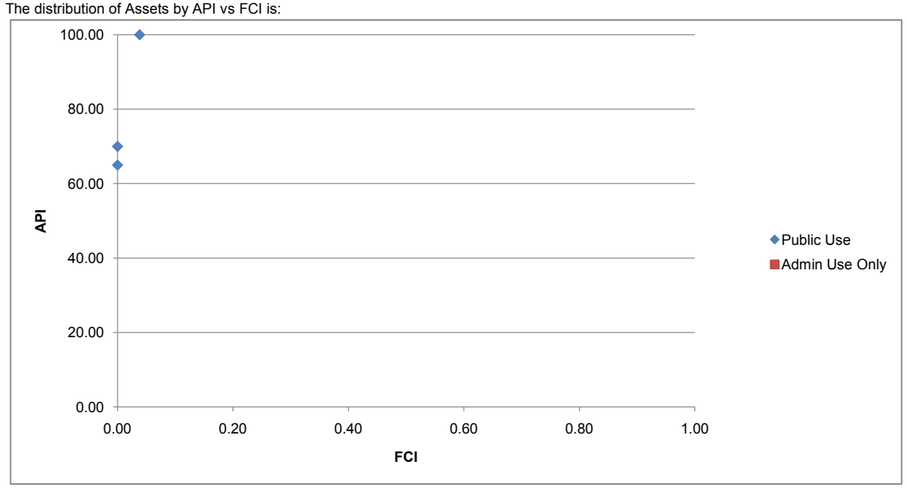
ID	Natl. Wildlife Refuge	Excellent	Good	Fair	Poor	Failed	Total
74500	Alaska Maritime	0.00	0.00	0.00	0.00	0.00	0.00
74512	Alaska Peninsula	41,666.67	0.00	0.00	0.00	0.00	41,666.67
75600	Arctic	17,555.56	0.00	0.00	0.00	0.00	17,555.56
74515	Becharof	0.00	0.00	0.00	0.00	0.00	0.00
75605	Innoko	0.00	0.00	0.00	0.00	0.00	0.00
74520	Izembek	0.00	0.00	0.00	0.00	0.00	0.00
75610	Kanuti	0.00	0.00	0.00	0.00	0.00	0.00
74525	Kenai	0.00	0.00	0.00	0.00	0.00	0.00
74530	Kodiak	0.00	0.00	0.00	0.00	0.00	0.00
75615	Koyukuk	0.00	0.00	0.00	0.00	0.00	0.00
75621	Nowitna	0.00	0.00	0.00	0.00	0.00	0.00
75625	Selawik	0.00	0.00	0.00	0.00	0.00	0.00
75630	Tetlin	0.00	0.00	0.00	0.00	0.00	0.00
74535	Togiak	0.00	0.00	0.00	0.00	0.00	0.00
74540	Yukon Delta	5,666.67	0.00	0.00	0.00	0.00	5,666.67
75635	Yukon Flats	0.00	0.00	0.00	0.00	0.00	0.00
	Total:	64,888.90	0.00	0.00	0.00	0.00	64,888.90
		100%	0%	0%	0%	0%	

Low Priority (API<60) - Condition Class (Size in SQYD)

Natl. Wildlife Refuge	Excellent	Good	Fair	Poor	Failed	Total
Alaska Maritime	0.00	0.00	0.00	0.00	0.00	0.00
Alaska Peninsula	0.00	0.00	0.00	0.00	0.00	0.00
Arctic	0.00	0.00	0.00	0.00	0.00	0.00
Becharof	0.00	0.00	0.00	0.00	0.00	0.00
Innoko	0.00	0.00	0.00	0.00	0.00	0.00
Izembek	0.00	0.00	0.00	0.00	0.00	0.00
Kanuti	0.00	0.00	0.00	0.00	0.00	0.00
Kenai	0.00	0.00	0.00	0.00	0.00	0.00
Kodiak	0.00	0.00	0.00	0.00	0.00	0.00
Koyukuk	0.00	0.00	0.00	0.00	0.00	0.00
Nowitna	0.00	0.00	0.00	0.00	0.00	0.00
Selawik	0.00	0.00	0.00	0.00	0.00	0.00
Tetlin	0.00	0.00	0.00	0.00	0.00	0.00
Togiak	0.00	0.00	0.00	0.00	0.00	0.00
Yukon Delta	0.00	0.00	0.00	0.00	0.00	0.00
Yukon Flats	0.00	0.00	0.00	0.00	0.00	0.00
Total:	0.00	0.00	0.00	0.00	0.00	0.00
	NA	NA	NA	NA	NA	

Investment Strategy:

The distribution of Assets by API vs FCI is:



Administrative Site Transportation Service Asset Management System Summary

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Fish and Wildlife Service - Administrative Site Transportation Asset Summary

FWS Region 7 Core Transportation Assets

Refuge	Roads (Paved) Lane Miles	Roads (Dirt) Lane Miles	Roads (Gravel) Lane Miles	Parking Lot Count	Trails (Paved) Length in LNFT	Trails (Unpaved) Length in LNFT	Boardwalks Length in LNFT	Bridges (Trail) Size in SQYD	Bridges (Culvert) Size in SQYD	Bridges (Road) Size in SQYD	Docks (Floating) Count	Docks (Stationary) Count	Airstrips Count
Aleutian Islands Unit	0	0	0	3	0	0	0	0	0	0	0	2	0
Aviation Manager	0	0	0	1	0	0	0	0	0	0	0	0	0
Bethel Administrative Site	0	0	1	2	0	0	0	0	0	0	0	0	0
Bettles AS	0	0	0	2	0	0	0	0	0	0	0	0	0
Cold Bay Hangar	0	0	0	2	0	0	0	0	0	0	0	0	0
Dillingham AS	0	0	0	7	0	0	0	0	0	0	0	0	0
Fort Yukon AS	0	0	0	1	0	0	0	0	0	0	0	0	0
Galena Administrative Site	0	0	0	9	0	0	0	0	0	0	1	0	0
Homer Visitor Center AS	0	0	0	2	1,880	1,015	1,400	122	0	0	0	0	0
Juneau Fish and Wildlife Field Office	0	0	0	0	0	0	0	0	0	0	0	1	0
Juneau Hangar Wildlife Administrative Site	2	0	0	0	0	0	0	0	0	0	0	0	0
Ketchikan Administrative Site	0	0	0	0	0	0	0	0	0	0	0	1	0
King Salmon AS	0	0	0	9	240	0	0	0	0	0	0	0	0
Kodiak AS	0	0	0	1	0	0	0	0	0	0	0	0	0
Kodiak Office	0	0	1	3	0	1,320	0	0	0	0	0	0	0
Kotzebue AS	0	0	0	5	0	0	0	0	0	0	0	0	0
McGrath AS	0	0	0	4	0	0	0	0	0	0	0	0	0
Tok AS	0	0	0	5	0	0	0	0	0	0	0	0	0
Total	2	0	2	56	2,120	2,335	1,400	122	0	0	1	4	0
Total DM	$5,646,310	$0	**$4,545,329**	**$14,570,638**	**$120,094**	**$248,505**	**$722,315**	**$344,346**	$0	$0	**$17,076**	**$15,527,468**	$0

High Priority Asset Condition (API >= 60)

Refuge	Roads (Paved)	Roads (Dirt)	Roads (Gravel)	Parking Lot	Trails (Paved)	Trails (Unpaved)	Boardwalks	Bridges (Trail)	Bridges (Culvert)	Bridges (Road)	Docks (Floating)	Docks (Stationary)	Airstrips
Excellent	100%	NA	100%	99%	100%	100%	100%	100%	NA	NA	NA	100%	NA
Good	0%	NA	0%	0%	0%	0%	0%	100%	NA	NA	NA	0%	NA
Fair	0%	NA	0%	0%	0%	0%	0%	100%	NA	NA	NA	0%	NA
Poor	0%	NA	0%	0%	0%	0%	0%	100%	NA	NA	NA	0%	NA
Failed	0%	NA	0%	1%	0%	0%	0%	100%	NA	NA	NA	0%	NA

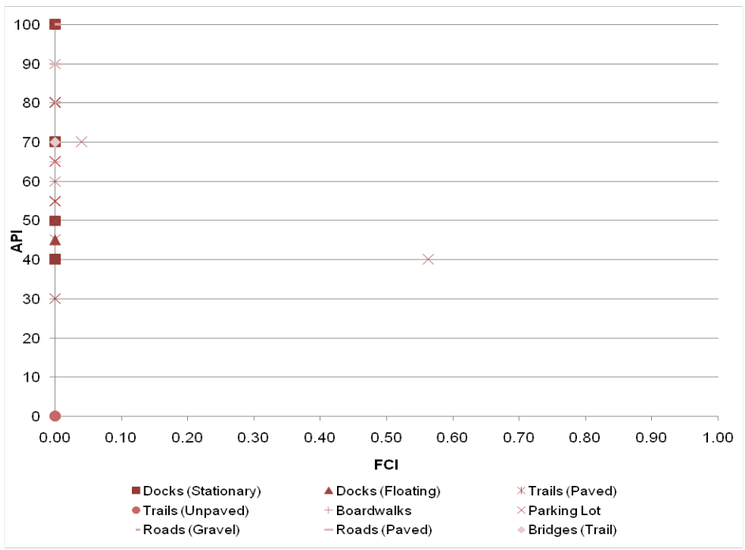
Low Priority Asset Condition (API < 60)

Refuge	Roads (Paved)	Roads (Dirt)	Roads (Gravel)	Parking Lot	Trails (Paved)	Trails (Unpaved)	Boardwalks	Bridges (Trail)	Bridges (Culvert)	Bridges (Road)	Docks (Floating)	Docks (Stationary)	Airstrips
Excellent	NA	NA	NA	94%	NA	NA	NA	NA	NA	NA	100%	100%	NA
Good	NA	NA	NA	0%	NA	NA	NA	NA	NA	NA	0%	0%	NA
Fair	NA	NA	NA	0%	NA	NA	NA	NA	NA	NA	0%	0%	NA
Poor	NA	NA	NA	6%	NA	NA	NA	NA	NA	NA	0%	0%	NA
Failed	NA	NA	NA	0%	NA	NA	NA	NA	NA	NA	0%	0%	NA

Major Asset Summary

	Quantity	Units
Road	4	Lane Miles
Trail*	5,855	Miles
Bridges (Road and Trail)	122	Each
Parking Lot	56	Count
Docks	5	Count
Airstrip	0	Count

** Includes boardwalks*



Asset: 40760100 Roads Paved

Inventory Summary:

The inventory is distributed across the region as follows:

ID	Administrative Site	Lane Miles	Count	Replace Value
74502	Aleutian Islands Unit	0.00	0	$0
70134	Aviation Manager	0.00	0	$0
74541	Bethel Administrative Site	0.00	0	$0
75611	Bettles AS	0.00	0	$0
72137	Cold Bay Hangar	0.00	0	$0
74536	Dillingham AS	0.00	0	$0
75636	Fort Yukon AS	0.00	0	$0
75616	Galena Administrative Site	0.00	0	$0
74505	Homer Visitor Center AS	0.00	0	$0
71440	Juneau Fish and Wildlife Field Office	0.00	0	$0
72138	Juneau Hangar Wildlife Administrative Site	2.30	1	$5,646,310
71441	Ketchikan Administrative Site	0.00	0	$0
74513	King Salmon AS	0.00	0	$0
74533	Kodiak AS	0.00	0	$0
74531	Kodiak Office	0.00	0	$0
75626	Kotzebue AS	0.00	0	$0
75606	McGrath AS	0.00	0	$0
75631	Tok AS	0.00	0	$0
	Total:	2.30	1	5,646,310

Class	FCI Range
Excellent	<=.10
Good	.10 - .15
Fair	.15 - .50
Poor	.50 - .70
Failed	> .70

Condition:

These assets have the following accumulated deferred maintenance and are in the condition class noted

ID	Administrative Site	Deferred Maint.
74502	Aleutian Islands Unit	$0
70134	Aviation Manager	$0
74541	Bethel Administrative Site	$0
75611	Bettles AS	$0
72137	Cold Bay Hangar	$0
74536	Dillingham AS	$0
75636	Fort Yukon AS	$0
75616	Galena Administrative Site	$0
74505	Homer Visitor Center AS	$0
71440	Juneau Fish and Wildlife Field Office	$0
72138	Juneau Hangar Wildlife Administrative Site	$0
71441	Ketchikan Administrative Site	$0
74513	King Salmon AS	$0
74533	Kodiak AS	$0
74531	Kodiak Office	$0
75626	Kotzebue AS	$0
75606	McGrath AS	$0
75631	Tok AS	$0
	Total:	$0
	Summary FCI (DM/CRV)	0.00

High Priority (API>=60) - Condition Class (Lane Miles)

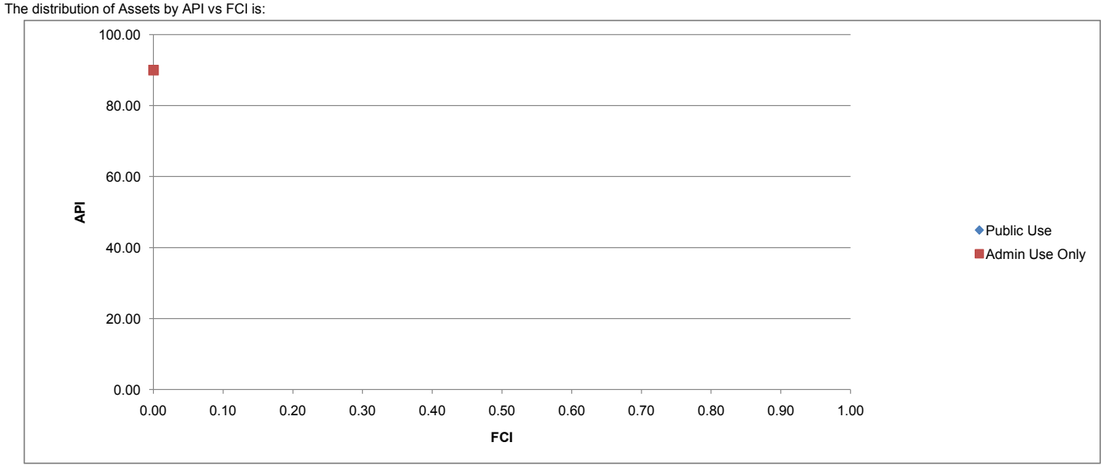
ID	Administrative Site	Excellent	Good	Fair	Poor	Failed	Total
74502	Aleutian Islands Unit	0.00	0.00	0.00	0.00	0.00	0.00
70134	Aviation Manager	0.00	0.00	0.00	0.00	0.00	0.00
74541	Bethel Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
75611	Bettles AS	0.00	0.00	0.00	0.00	0.00	0.00
72137	Cold Bay Hangar	0.00	0.00	0.00	0.00	0.00	0.00
74536	Dillingham AS	0.00	0.00	0.00	0.00	0.00	0.00
75636	Fort Yukon AS	0.00	0.00	0.00	0.00	0.00	0.00
75616	Galena Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
74505	Homer Visitor Center AS	0.00	0.00	0.00	0.00	0.00	0.00
71440	Juneau Fish and Wildlife Field Office	0.00	0.00	0.00	0.00	0.00	0.00
72138	Juneau Hangar Wildlife Administrative Site	2.30	0.00	0.00	0.00	0.00	2.30
71441	Ketchikan Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
74513	King Salmon AS	0.00	0.00	0.00	0.00	0.00	0.00
74533	Kodiak AS	0.00	0.00	0.00	0.00	0.00	0.00
74531	Kodiak Office	0.00	0.00	0.00	0.00	0.00	0.00
75626	Kotzebue AS	0.00	0.00	0.00	0.00	0.00	0.00
75606	McGrath AS	0.00	0.00	0.00	0.00	0.00	0.00
75631	Tok AS	0.00	0.00	0.00	0.00	0.00	0.00
	Total:	2.30	0.00	0.00	0.00	0.00	2.30
		100%	0%	0%	0%	0%	

Low Priority (API<60) - Condition Class (Lane Miles)

Administrative Site	Excellent	Good	Fair	Poor	Failed	Total
Aleutian Islands Unit	0.00	0.00	0.00	0.00	0.00	0.00
Aviation Manager	0.00	0.00	0.00	0.00	0.00	0.00
Bethel Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
Bettles AS	0.00	0.00	0.00	0.00	0.00	0.00
Cold Bay Hangar	0.00	0.00	0.00	0.00	0.00	0.00
Dillingham AS	0.00	0.00	0.00	0.00	0.00	0.00
Fort Yukon AS	0.00	0.00	0.00	0.00	0.00	0.00
Galena Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
Homer Visitor Center AS	0.00	0.00	0.00	0.00	0.00	0.00
Juneau Fish and Wildlife Field Office	0.00	0.00	0.00	0.00	0.00	0.00
Juneau Hangar Wildlife Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
Ketchikan Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
King Salmon AS	0.00	0.00	0.00	0.00	0.00	0.00
Kodiak AS	0.00	0.00	0.00	0.00	0.00	0.00
Kodiak Office	0.00	0.00	0.00	0.00	0.00	0.00
Kotzebue AS	0.00	0.00	0.00	0.00	0.00	0.00
McGrath AS	0.00	0.00	0.00	0.00	0.00	0.00
Tok AS	0.00	0.00	0.00	0.00	0.00	0.00
Total:	0.00	0.00	0.00	0.00	0.00	0.00
	NA	NA	NA	NA	NA	

Investment Strategy:

The distribution of Assets by API vs FCI is:



Asset: 40760200 Roads Gravel

Inventory Summary:

The inventory is distributed across the region as follows:

ID	Administrative Site	Lane Miles	Count	Replace Value
74502	Aleutian Islands Unit	0.00	0	$0
70134	Aviation Manager	0.00	0	$0
74541	Bethel Administrative Site	0.80	3	$2,692,615
75611	Bettles AS	0.00	0	$0
72137	Cold Bay Hangar	0.00	0	$0
74536	Dillingham AS	0.00	0	$0
75636	Fort Yukon AS	0.00	0	$0
75616	Galena Administrative Site	0.00	0	$0
74505	Homer Visitor Center AS	0.00	0	$0
71440	Juneau Fish and Wildlife Field Office	0.00	0	$0
72138	Juneau Hangar Wildlife Administrative Site	0.00	0	$0
71441	Ketchikan Administrative Site	0.00	0	$0
74513	King Salmon AS	0.27	5	$994,035
74533	Kodiak AS	0.00	0	$0
74531	Kodiak Office	1.00	2	$858,679
75626	Kotzebue AS	0.00	0	$0
75606	McGrath AS	0.00	0	$0
75631	Tok AS	0.00	0	$0
	Total:	2.07	10	4,545,329

Class	FCI Range
Excellent	<=.10
Good	.10 - .15
Fair	.15 - .50
Poor	.50 - .70
Failed	> .70

Condition:

These assets have the following accumulated deferred maintenance and are in the condition class noted

ID	Administrative Site	Deferred Maint.
74502	Aleutian Islands Unit	$0
70134	Aviation Manager	$0
74541	Bethel Administrative Site	$0
75611	Bettles AS	$0
72137	Cold Bay Hangar	$0
74536	Dillingham AS	$0
75636	Fort Yukon AS	$0
75616	Galena Administrative Site	$0
74505	Homer Visitor Center AS	$0
71440	Juneau Fish and Wildlife Field Office	$0
72138	Juneau Hangar Wildlife Administrative Site	$0
71441	Ketchikan Administrative Site	$0
74513	King Salmon AS	$0
74533	Kodiak AS	$0
74531	Kodiak Office	$0
75626	Kotzebue AS	$0
75606	McGrath AS	$0
75631	Tok AS	$0
	Total:	$0
	Summary FCI (DM/CRV)	0.00

High Priority (API>=60) - Condition Class (Lane Miles)

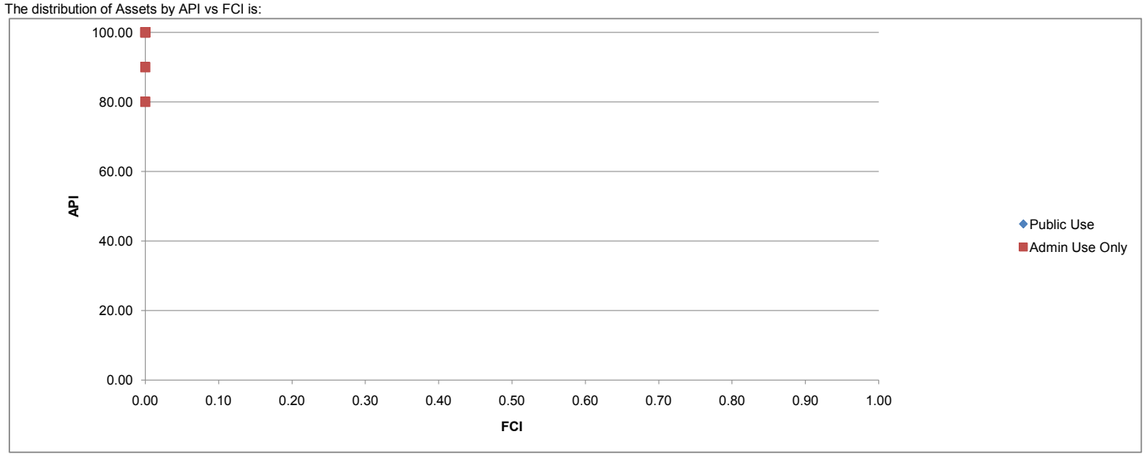
ID	Administrative Site	Excellent	Good	Fair	Poor	Failed	Total
74502	Aleutian Islands Unit	0.00	0.00	0.00	0.00	0.00	0.00
70134	Aviation Manager	0.00	0.00	0.00	0.00	0.00	0.00
74541	Bethel Administrative Site	0.80	0.00	0.00	0.00	0.00	0.80
75611	Bettles AS	0.00	0.00	0.00	0.00	0.00	0.00
72137	Cold Bay Hangar	0.00	0.00	0.00	0.00	0.00	0.00
74536	Dillingham AS	0.00	0.00	0.00	0.00	0.00	0.00
75636	Fort Yukon AS	0.00	0.00	0.00	0.00	0.00	0.00
75616	Galena Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
74505	Homer Visitor Center AS	0.00	0.00	0.00	0.00	0.00	0.00
71440	Juneau Fish and Wildlife Field Office	0.00	0.00	0.00	0.00	0.00	0.00
72138	Juneau Hangar Wildlife Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
71441	Ketchikan Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
74513	King Salmon AS	0.27	0.00	0.00	0.00	0.00	0.27
74533	Kodiak AS	0.00	0.00	0.00	0.00	0.00	0.00
74531	Kodiak Office	1.00	0.00	0.00	0.00	0.00	1.00
75626	Kotzebue AS	0.00	0.00	0.00	0.00	0.00	0.00
75606	McGrath AS	0.00	0.00	0.00	0.00	0.00	0.00
75631	Tok AS	0.00	0.00	0.00	0.00	0.00	0.00
	Total:	2.07	0.00	0.00	0.00	0.00	2.07
		100%	0%	0%	0%	0%	

Low Priority (API<60) - Condition Class (Lane Miles)

Administrative Site	Excellent	Good	Fair	Poor	Failed	Total
Aleutian Islands Unit	0.00	0.00	0.00	0.00	0.00	0.00
Aviation Manager	0.00	0.00	0.00	0.00	0.00	0.00
Bethel Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
Bettles AS	0.00	0.00	0.00	0.00	0.00	0.00
Cold Bay Hangar	0.00	0.00	0.00	0.00	0.00	0.00
Dillingham AS	0.00	0.00	0.00	0.00	0.00	0.00
Fort Yukon AS	0.00	0.00	0.00	0.00	0.00	0.00
Galena Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
Homer Visitor Center AS	0.00	0.00	0.00	0.00	0.00	0.00
Juneau Fish and Wildlife Field Office	0.00	0.00	0.00	0.00	0.00	0.00
Juneau Hangar Wildlife Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
Ketchikan Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
King Salmon AS	0.00	0.00	0.00	0.00	0.00	0.00
Kodiak AS	0.00	0.00	0.00	0.00	0.00	0.00
Kodiak Office	0.00	0.00	0.00	0.00	0.00	0.00
Kotzebue AS	0.00	0.00	0.00	0.00	0.00	0.00
McGrath AS	0.00	0.00	0.00	0.00	0.00	0.00
Tok AS	0.00	0.00	0.00	0.00	0.00	0.00
Total:	0.00	0.00	0.00	0.00	0.00	0.00
	NA	NA	NA	NA	NA	

Investment Strategy:

The distribution of Assets by API vs FCI is:



Asset: 40760300 Roads Dirt

Inventory Summary:

The inventory is distributed across the region as follows:

ID	Administrative Site	Lane Miles	Count	Replace Value
74502	Aleutian Islands Unit	0.00	0	$0
70134	Aviation Manager	0.00	0	$0
74541	Bethel Administrative Site	0.00	0	$0
75611	Bettles AS	0.00	0	$0
72137	Cold Bay Hangar	0.00	0	$0
74536	Dillingham AS	0.00	0	$0
75636	Fort Yukon AS	0.00	0	$0
75616	Galena Administrative Site	0.00	0	$0
74505	Homer Visitor Center AS	0.00	0	$0
71440	Juneau Fish and Wildlife Field Office	0.00	0	$0
72138	Juneau Hangar Wildlife Administrative Site	0.00	0	$0
71441	Ketchikan Administrative Site	0.00	0	$0
74513	King Salmon AS	0.00	0	$0
74533	Kodiak AS	0.00	0	$0
74531	Kodiak Office	0.00	0	$0
75626	Kotzebue AS	0.00	0	$0
75606	McGrath AS	0.00	0	$0
75631	Tok AS	0.00	0	$0
	Total:	0.00	0	0

Class	FCI Range
Excellent	<=.10
Good	.10 - .15
Fair	.15 - .50
Poor	.50 - .70
Failed	> .70

Condition:

These assets have the following accumulated deferred maintenance and are in the condition class noted

ID	Administrative Site	Deferred Maint.
74502	Aleutian Islands Unit	$0
70134	Aviation Manager	$0
74541	Bethel Administrative Site	$0
75611	Bettles AS	$0
72137	Cold Bay Hangar	$0
74536	Dillingham AS	$0
75636	Fort Yukon AS	$0
75616	Galena Administrative Site	$0
74505	Homer Visitor Center AS	$0
71440	Juneau Fish and Wildlife Field Office	$0
72138	Juneau Hangar Wildlife Administrative Site	$0
71441	Ketchikan Administrative Site	$0
74513	King Salmon AS	$0
74533	Kodiak AS	$0
74531	Kodiak Office	$0
75626	Kotzebue AS	$0
75606	McGrath AS	$0
75631	Tok AS	$0
	Total:	$0
	Summary FCI (DM/CRV)	#DIV/0!

High Priority (API>=60) - Condition Class (Lane Miles)

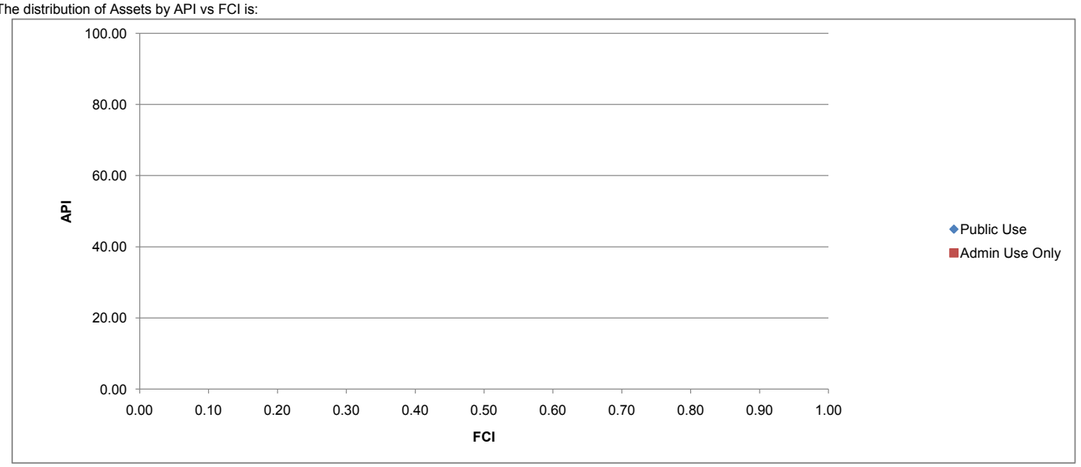
ID	Administrative Site	Excellent	Good	Fair	Poor	Failed	Total
74502	Aleutian Islands Unit	0.00	0.00	0.00	0.00	0.00	0.00
70134	Aviation Manager	0.00	0.00	0.00	0.00	0.00	0.00
74541	Bethel Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
75611	Bettles AS	0.00	0.00	0.00	0.00	0.00	0.00
72137	Cold Bay Hangar	0.00	0.00	0.00	0.00	0.00	0.00
74536	Dillingham AS	0.00	0.00	0.00	0.00	0.00	0.00
75636	Fort Yukon AS	0.00	0.00	0.00	0.00	0.00	0.00
75616	Galena Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
74505	Homer Visitor Center AS	0.00	0.00	0.00	0.00	0.00	0.00
71440	Juneau Fish and Wildlife Field Office	0.00	0.00	0.00	0.00	0.00	0.00
72138	Juneau Hangar Wildlife Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
71441	Ketchikan Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
74513	King Salmon AS	0.00	0.00	0.00	0.00	0.00	0.00
74533	Kodiak AS	0.00	0.00	0.00	0.00	0.00	0.00
74531	Kodiak Office	0.00	0.00	0.00	0.00	0.00	0.00
75626	Kotzebue AS	0.00	0.00	0.00	0.00	0.00	0.00
75606	McGrath AS	0.00	0.00	0.00	0.00	0.00	0.00
75631	Tok AS	0.00	0.00	0.00	0.00	0.00	0.00
	Total:	0.00	0.00	0.00	0.00	0.00	0.00
		NA	NA	NA	NA	NA	

Low Priority (API<60) - Condition Class (Lane Miles)

Administrative Site	Excellent	Good	Fair	Poor	Failed	Total
Aleutian Islands Unit	0.00	0.00	0.00	0.00	0.00	0.00
Aviation Manager	0.00	0.00	0.00	0.00	0.00	0.00
Bethel Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
Bettles AS	0.00	0.00	0.00	0.00	0.00	0.00
Cold Bay Hangar	0.00	0.00	0.00	0.00	0.00	0.00
Dillingham AS	0.00	0.00	0.00	0.00	0.00	0.00
Fort Yukon AS	0.00	0.00	0.00	0.00	0.00	0.00
Galena Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
Homer Visitor Center AS	0.00	0.00	0.00	0.00	0.00	0.00
Juneau Fish and Wildlife Field Office	0.00	0.00	0.00	0.00	0.00	0.00
Juneau Hangar Wildlife Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
Ketchikan Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
King Salmon AS	0.00	0.00	0.00	0.00	0.00	0.00
Kodiak AS	0.00	0.00	0.00	0.00	0.00	0.00
Kodiak Office	0.00	0.00	0.00	0.00	0.00	0.00
Kotzebue AS	0.00	0.00	0.00	0.00	0.00	0.00
McGrath AS	0.00	0.00	0.00	0.00	0.00	0.00
Tok AS	0.00	0.00	0.00	0.00	0.00	0.00
Total:	0.00	0.00	0.00	0.00	0.00	0.00
	NA	NA	NA	NA	NA	

Investment Strategy:

The distribution of Assets by API vs FCI is:



Asset: 40660100 Parking Lot

Inventory Summary:

The inventory is distributed across the region as follows:

ID	Administrative Site	Size in SQYD	Count	Replace Value
74502	Aleutian Islands Unit	13,266.67	3	$1,908,812
70134	Aviation Manager	18,175.00	1	$959,564
74541	Bethel Administrative Site	2,697.33	2	$1,136,326
75611	Bettles AS	2,166.67	2	$221,476
72137	Cold Bay Hangar	1,244.45	2	$235,377
74536	Dillingham AS	9,400.00	7	$2,602,629
75636	Fort Yukon AS	155.56	1	$32,920
75616	Galena Administrative Site	4,519.98	9	$741,340
74505	Homer Visitor Center AS	9,522.22	2	$2,002,774
71440	Juneau Fish and Wildlife Field Office	0.00	0	$0
72138	Juneau Hangar Wildlife Administrative Site	0.00	0	$0
71441	Ketchikan Administrative Site	0.00	0	$0
74513	King Salmon AS	6,342.21	9	$1,632,380
74533	Kodiak AS	765.33	1	$98,016
74531	Kodiak Office	3,054.66	3	$486,495
75626	Kotzebue AS	3,000.00	5	$974,150
75606	McGrath AS	5,102.21	4	$1,254,597
75631	Tok AS	1,666.68	5	$283,781
	Total:	81,078.97	56	14,570,638

Class	FCI Range
Excellent	<=.10
Good	.10 - .15
Fair	.15 - .50
Poor	.50 - .70
Failed	> .70

Condition:

These assets have the following accumulated deferred maintenance and are in the condition class noted

ID	Administrative Site	Deferred Maint.
74502	Aleutian Islands Unit	$0
70134	Aviation Manager	$0
74541	Bethel Administrative Site	$0
75611	Bettles AS	$0
72137	Cold Bay Hangar	$0
74536	Dillingham AS	$20,000
75636	Fort Yukon AS	$0
75616	Galena Administrative Site	$0
74505	Homer Visitor Center AS	$80,680
71440	Juneau Fish and Wildlife Field Office	$0
72138	Juneau Hangar Wildlife Administrative Site	$0
71441	Ketchikan Administrative Site	$0
74513	King Salmon AS	$0
74533	Kodiak AS	$120,000
74531	Kodiak Office	$0
75626	Kotzebue AS	$0
75606	McGrath AS	$0
75631	Tok AS	$0
	Total:	$220,680
	Summary FCI (DM/CRV)	0.02

High Priority (API>=60) - Condition Class (Size in SQYD)

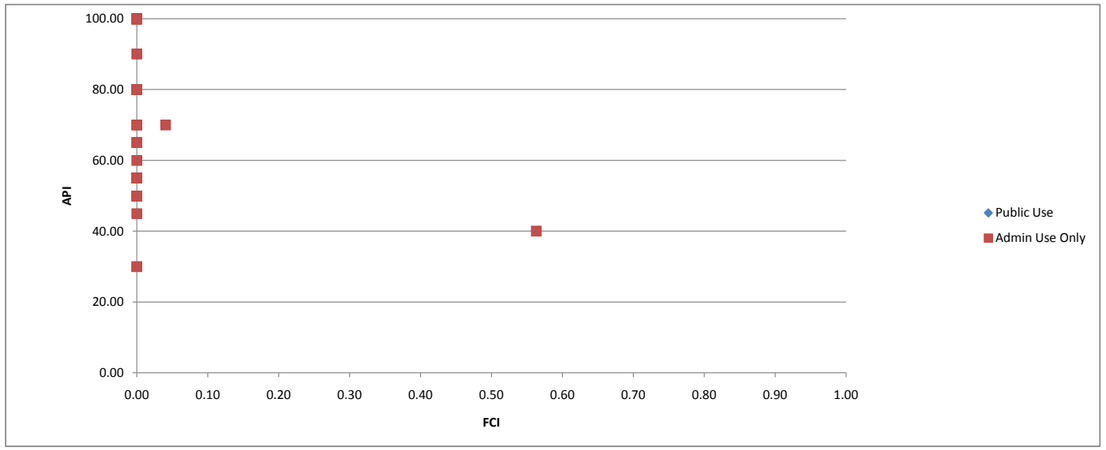
ID	Administrative Site	Excellent	Good	Fair	Poor	Failed	Total
74502	Aleutian Islands Unit	7,933.34	0.00	0.00	0.00	0.00	7,933.34
70134	Aviation Manager	18,175.00	0.00	0.00	0.00	0.00	18,175.00
74541	Bethel Administrative Site	2,697.33	0.00	0.00	0.00	0.00	2,697.33
75611	Bettles AS	2,166.67	0.00	0.00	0.00	0.00	2,166.67
72137	Cold Bay Hangar	1,244.45	0.00	0.00	0.00	0.00	1,244.45
74536	Dillingham AS	9,400.00	0.00	0.00	0.00	0.00	9,400.00
75636	Fort Yukon AS	155.56	0.00	0.00	0.00	0.00	155.56
75616	Galena Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
74505	Homer Visitor Center AS	8,622.22	0.00	0.00	0.00	0.00	8,622.22
71440	Juneau Fish and Wildlife Field Office	0.00	0.00	0.00	0.00	0.00	0.00
72138	Juneau Hangar Wildlife Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
71441	Ketchikan Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
74513	King Salmon AS	6,342.21	0.00	0.00	0.00	0.00	6,342.21
74533	Kodiak AS	0.00	0.00	0.00	0.00	765.33	765.33
74531	Kodiak Office	3,054.66	0.00	0.00	0.00	0.00	3,054.66
75626	Kotzebue AS	1,600.00	0.00	0.00	0.00	0.00	1,600.00
75606	McGrath AS	1,768.88	0.00	0.00	0.00	0.00	1,768.88
75631	Tok AS	1,666.68	0.00	0.00	0.00	0.00	1,666.68
	Total:	64,827.00	0.00	0.00	0.00	765.33	65,592.33
		99%	0%	0%	0%	1%	

Low Priority (API<60) - Condition Class (Size in SQYD)

Administrative Site	Excellent	Good	Fair	Poor	Failed	Total
Aleutian Islands Unit	5,333.33	0.00	0.00	0.00	0.00	5,333.33
Aviation Manager	0.00	0.00	0.00	0.00	0.00	0.00
Bethel Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
Bettles AS	0.00	0.00	0.00	0.00	0.00	0.00
Cold Bay Hangar	0.00	0.00	0.00	0.00	0.00	0.00
Dillingham AS	0.00	0.00	0.00	0.00	0.00	0.00
Fort Yukon AS	0.00	0.00	0.00	0.00	0.00	0.00
Galena Administrative Site	4,519.98	0.00	0.00	0.00	0.00	4,519.98
Homer Visitor Center AS	0.00	0.00	0.00	900.00	0.00	900.00
Juneau Fish and Wildlife Field Office	0.00	0.00	0.00	0.00	0.00	0.00
Juneau Hangar Wildlife Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
Ketchikan Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
King Salmon AS	0.00	0.00	0.00	0.00	0.00	0.00
Kodiak AS	0.00	0.00	0.00	0.00	0.00	0.00
Kodiak Office	0.00	0.00	0.00	0.00	0.00	0.00
Kotzebue AS	1,400.00	0.00	0.00	0.00	0.00	1,400.00
McGrath AS	3,333.33	0.00	0.00	0.00	0.00	3,333.33
Tok AS	0.00	0.00	0.00	0.00	0.00	0.00
Total:	14,586.64	0.00	0.00	900.00	0.00	15,486.64
	94%	0%	0%	6%	0%	

Investment Strategy:

The distribution of Assets by API vs FCI is:



Asset: 40751000 Trails Paved

Inventory Summary:

The inventory is distributed across the region as follows:

ID	Administrative Site	Length in LNFT	Count	Replace Value
74502	Aleutian Islands Unit	0.00	0	$0
70134	Aviation Manager	0.00	0	$0
74541	Bethel Administrative Site	0.00	0	$0
75611	Bettles AS	0.00	0	$0
72137	Cold Bay Hangar	0.00	0	$0
74536	Dillingham AS	0.00	0	$0
75636	Fort Yukon AS	0.00	0	$0
75616	Galena Administrative Site	0.00	0	$0
74505	Homer Visitor Center AS	1,880.00	2	$81,898
71440	Juneau Fish and Wildlife Field Office	0.00	0	$0
72138	Juneau Hangar Wildlife Administrative Site	0.00	0	$0
71441	Ketchikan Administrative Site	0.00	0	$0
74513	King Salmon AS	240.00	1	$38,196
74533	Kodiak AS	0.00	0	$0
74531	Kodiak Office	0.00	0	$0
75626	Kotzebue AS	0.00	0	$0
75606	McGrath AS	0.00	0	$0
75631	Tok AS	0.00	0	$0
	Total:	2,120.00	3	120,094

Class	FCI Range
Excellent	<=.10
Good	.10 - .15
Fair	.15 - .50
Poor	.50 - .70
Failed	> .70

Condition:

These assets have the following accumulated deferred maintenance and are in the condition class noted

ID	Administrative Site	Deferred Maint.
74502	Aleutian Islands Unit	$0
70134	Aviation Manager	$0
74541	Bethel Administrative Site	$0
75611	Bettles AS	$0
72137	Cold Bay Hangar	$0
74536	Dillingham AS	$0
75636	Fort Yukon AS	$0
75616	Galena Administrative Site	$0
74505	Homer Visitor Center AS	$0
71440	Juneau Fish and Wildlife Field Office	$0
72138	Juneau Hangar Wildlife Administrative Site	$0
71441	Ketchikan Administrative Site	$0
74513	King Salmon AS	$0
74533	Kodiak AS	$0
74531	Kodiak Office	$0
75626	Kotzebue AS	$0
75606	McGrath AS	$0
75631	Tok AS	$0
	Total:	$0
	Summary FCI (DM/CRV)	0.00

High Priority (API>=60) - Condition Class (Length in LNFT)

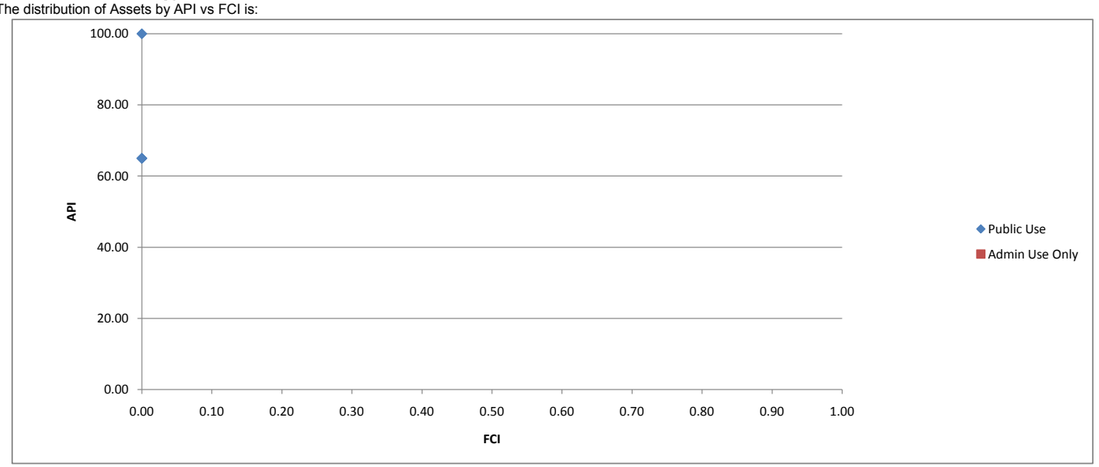
ID	Administrative Site	Excellent	Good	Fair	Poor	Failed	Total
74502	Aleutian Islands Unit	0.00	0.00	0.00	0.00	0.00	0.00
70134	Aviation Manager	0.00	0.00	0.00	0.00	0.00	0.00
74541	Bethel Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
75611	Bettles AS	0.00	0.00	0.00	0.00	0.00	0.00
72137	Cold Bay Hangar	0.00	0.00	0.00	0.00	0.00	0.00
74536	Dillingham AS	0.00	0.00	0.00	0.00	0.00	0.00
75636	Fort Yukon AS	0.00	0.00	0.00	0.00	0.00	0.00
75616	Galena Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
74505	Homer Visitor Center AS	2.00	0.00	0.00	0.00	0.00	2.00
71440	Juneau Fish and Wildlife Field Office	0.00	0.00	0.00	0.00	0.00	0.00
72138	Juneau Hangar Wildlife Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
71441	Ketchikan Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
74513	King Salmon AS	1.00	0.00	0.00	0.00	0.00	1.00
74533	Kodiak AS	0.00	0.00	0.00	0.00	0.00	0.00
74531	Kodiak Office	0.00	0.00	0.00	0.00	0.00	0.00
75626	Kotzebue AS	0.00	0.00	0.00	0.00	0.00	0.00
75606	McGrath AS	0.00	0.00	0.00	0.00	0.00	0.00
75631	Tok AS	0.00	0.00	0.00	0.00	0.00	0.00
	Total:	3.00	0.00	0.00	0.00	0.00	3.00
		100%	0%	0%	0%	0%	

Low Priority (API<60) - Condition Class (Length in LNFT)

Administrative Site	Excellent	Good	Fair	Poor	Failed	Total
Aleutian Islands Unit	0.00	0.00	0.00	0.00	0.00	0.00
Aviation Manager	0.00	0.00	0.00	0.00	0.00	0.00
Bethel Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
Bettles AS	0.00	0.00	0.00	0.00	0.00	0.00
Cold Bay Hangar	0.00	0.00	0.00	0.00	0.00	0.00
Dillingham AS	0.00	0.00	0.00	0.00	0.00	0.00
Fort Yukon AS	0.00	0.00	0.00	0.00	0.00	0.00
Galena Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
Homer Visitor Center AS	0.00	0.00	0.00	0.00	0.00	0.00
Juneau Fish and Wildlife Field Office	0.00	0.00	0.00	0.00	0.00	0.00
Juneau Hangar Wildlife Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
Ketchikan Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
King Salmon AS	0.00	0.00	0.00	0.00	0.00	0.00
Kodiak AS	0.00	0.00	0.00	0.00	0.00	0.00
Kodiak Office	0.00	0.00	0.00	0.00	0.00	0.00
Kotzebue AS	0.00	0.00	0.00	0.00	0.00	0.00
McGrath AS	0.00	0.00	0.00	0.00	0.00	0.00
Tok AS	0.00	0.00	0.00	0.00	0.00	0.00
Total:	0.00	0.00	0.00	0.00	0.00	0.00
	NA	NA	NA	NA	NA	

Investment Strategy:

The distribution of Assets by API vs FCI is:



Asset: 40751100 Trails Unpaved

Inventory Summary:

The inventory is distributed across the region as follows:

ID	Administrative Site	Length in LNFT	Count	Replace Value
74502	Aleutian Islands Unit	0.00	0	$0
70134	Aviation Manager	0.00	0	$0
74541	Bethel Administrative Site	0.00	0	$0
75611	Bettles AS	0.00	0	$0
72137	Cold Bay Hangar	0.00	0	$0
74536	Dillingham AS	0.00	0	$0
75636	Fort Yukon AS	0.00	0	$0
75616	Galena Administrative Site	0.00	0	$0
74505	Homer Visitor Center AS	1,015.00	1	$129,497
71440	Juneau Fish and Wildlife Field Office	0.00	0	$0
72138	Juneau Hangar Wildlife Administrative Site	0.00	0	$0
71441	Ketchikan Administrative Site	0.00	0	$0
74513	King Salmon AS	0.00	0	$0
74533	Kodiak AS	0.00	0	$0
74531	Kodiak Office	1,320.00	1	$119,008
75626	Kotzebue AS	0.00	0	$0
75606	McGrath AS	0.00	0	$0
75631	Tok AS	0.00	0	$0
	Total:	2,335.00	2	248,505

Class	FCI Range
Excellent	<=.10
Good	.10 - .15
Fair	.15 - .50
Poor	.50 - .70
Failed	> .70

Condition:

These assets have the following accumulated deferred maintenance and are in the condition class noted

ID	Administrative Site	Deferred Maint.
74502	Aleutian Islands Unit	$0
70134	Aviation Manager	$0
74541	Bethel Administrative Site	$0
75611	Bettles AS	$0
72137	Cold Bay Hangar	$0
74536	Dillingham AS	$0
75636	Fort Yukon AS	$0
75616	Galena Administrative Site	$0
74505	Homer Visitor Center AS	$0
71440	Juneau Fish and Wildlife Field Office	$0
72138	Juneau Hangar Wildlife Administrative Site	$0
71441	Ketchikan Administrative Site	$0
74513	King Salmon AS	$0
74533	Kodiak AS	$0
74531	Kodiak Office	$0
75626	Kotzebue AS	$0
75606	McGrath AS	$0
75631	Tok AS	$0
	Total:	$0
	Summary FCI (DM/CRV)	0.00

High Priority (API>=60) - Condition Class (Length in LNFT)

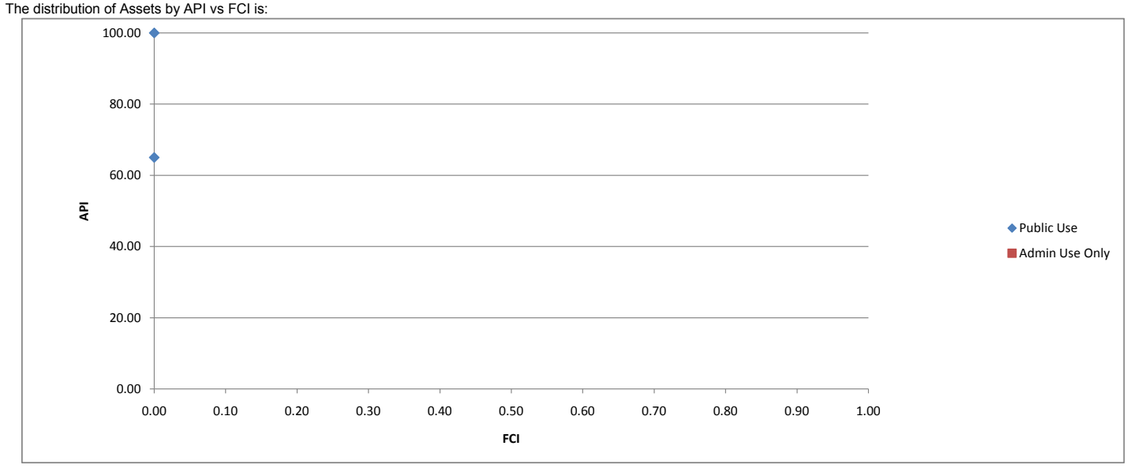
ID	Administrative Site	Excellent	Good	Fair	Poor	Failed	Total
74502	Aleutian Islands Unit	0.00	0.00	0.00	0.00	0.00	0.00
70134	Aviation Manager	0.00	0.00	0.00	0.00	0.00	0.00
74541	Bethel Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
75611	Bettles AS	0.00	0.00	0.00	0.00	0.00	0.00
72137	Cold Bay Hangar	0.00	0.00	0.00	0.00	0.00	0.00
74536	Dillingham AS	0.00	0.00	0.00	0.00	0.00	0.00
75636	Fort Yukon AS	0.00	0.00	0.00	0.00	0.00	0.00
75616	Galena Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
74505	Homer Visitor Center AS	1.00	0.00	0.00	0.00	0.00	1.00
71440	Juneau Fish and Wildlife Field Office	0.00	0.00	0.00	0.00	0.00	0.00
72138	Juneau Hangar Wildlife Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
71441	Ketchikan Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
74513	King Salmon AS	0.00	0.00	0.00	0.00	0.00	0.00
74533	Kodiak AS	0.00	0.00	0.00	0.00	0.00	0.00
74531	Kodiak Office	1.00	0.00	0.00	0.00	0.00	1.00
75626	Kotzebue AS	0.00	0.00	0.00	0.00	0.00	0.00
75606	McGrath AS	0.00	0.00	0.00	0.00	0.00	0.00
75631	Tok AS	0.00	0.00	0.00	0.00	0.00	0.00
	Total:	2.00	0.00	0.00	0.00	0.00	2.00
		100%	0%	0%	0%	0%	

Low Priority (API<60) - Condition Class (Length in LNFT)

Administrative Site	Excellent	Good	Fair	Poor	Failed	Total
Aleutian Islands Unit	0.00	0.00	0.00	0.00	0.00	0.00
Aviation Manager	0.00	0.00	0.00	0.00	0.00	0.00
Bethel Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
Bettles AS	0.00	0.00	0.00	0.00	0.00	0.00
Cold Bay Hangar	0.00	0.00	0.00	0.00	0.00	0.00
Dillingham AS	0.00	0.00	0.00	0.00	0.00	0.00
Fort Yukon AS	0.00	0.00	0.00	0.00	0.00	0.00
Galena Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
Homer Visitor Center AS	0.00	0.00	0.00	0.00	0.00	0.00
Juneau Fish and Wildlife Field Office	0.00	0.00	0.00	0.00	0.00	0.00
Juneau Hangar Wildlife Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
Ketchikan Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
King Salmon AS	0.00	0.00	0.00	0.00	0.00	0.00
Kodiak AS	0.00	0.00	0.00	0.00	0.00	0.00
Kodiak Office	0.00	0.00	0.00	0.00	0.00	0.00
Kotzebue AS	0.00	0.00	0.00	0.00	0.00	0.00
McGrath AS	0.00	0.00	0.00	0.00	0.00	0.00
Tok AS	0.00	0.00	0.00	0.00	0.00	0.00
Total:	0.00	0.00	0.00	0.00	0.00	0.00
	NA	NA	NA	NA	NA	

Investment Strategy:

The distribution of Assets by API vs FCI is:



Asset: 40751300 Boardwalks

Inventory Summary:

The inventory is distributed across the region as follows:

ID	Administrative Site	Length in LNFT	Count	Replace Value
74502	Aleutian Islands Unit	0.00	0	$0
70134	Aviation Manager	0.00	0	$0
74541	Bethel Administrative Site	0.00	0	$0
75611	Bettles AS	0.00	0	$0
72137	Cold Bay Hangar	0.00	0	$0
74536	Dillingham AS	0.00	0	$0
75636	Fort Yukon AS	0.00	0	$0
75616	Galena Administrative Site	0.00	0	$0
74505	Homer Visitor Center AS	1,400.00	1	$722,315
71440	Juneau Fish and Wildlife Field Office	0.00	0	$0
72138	Juneau Hangar Wildlife Administrative Site	0.00	0	$0
71441	Ketchikan Administrative Site	0.00	0	$0
74513	King Salmon AS	0.00	0	$0
74533	Kodiak AS	0.00	0	$0
74531	Kodiak Office	0.00	0	$0
75626	Kotzebue AS	0.00	0	$0
75606	McGrath AS	0.00	0	$0
75631	Tok AS	0.00	0	$0
	Total:	1,400.00	1	722,315

Class	FCI Range
Excellent	<=.10
Good	.10 - .15
Fair	.15 - .50
Poor	.50 - .70
Failed	> .70

Condition:

These assets have the following accumulated deferred maintenance and are in the condition class noted

ID	Administrative Site	Deferred Maint.
74502	Aleutian Islands Unit	$0
70134	Aviation Manager	$0
74541	Bethel Administrative Site	$0
75611	Bettles AS	$0
72137	Cold Bay Hangar	$0
74536	Dillingham AS	$0
75636	Fort Yukon AS	$0
75616	Galena Administrative Site	$0
74505	Homer Visitor Center AS	$0
71440	Juneau Fish and Wildlife Field Office	$0
72138	Juneau Hangar Wildlife Administrative Site	$0
71441	Ketchikan Administrative Site	$0
74513	King Salmon AS	$0
74533	Kodiak AS	$0
74531	Kodiak Office	$0
75626	Kotzebue AS	$0
75606	McGrath AS	$0
75631	Tok AS	$0
	Total:	$0
	Summary FCI (DM/CRV)	0.00

High Priority (API>=60) - Condition Class (Length in LNFT)

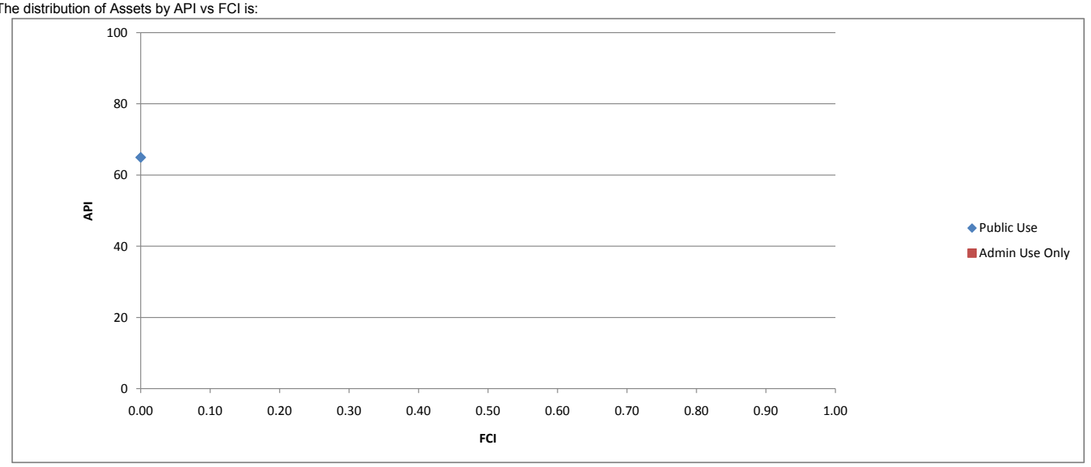
ID	Administrative Site	Excellent	Good	Fair	Poor	Failed	Total
74502	Aleutian Islands Unit	0.00	0.00	0.00	0.00	0.00	0.00
70134	Aviation Manager	0.00	0.00	0.00	0.00	0.00	0.00
74541	Bethel Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
75611	Bettles AS	0.00	0.00	0.00	0.00	0.00	0.00
72137	Cold Bay Hangar	0.00	0.00	0.00	0.00	0.00	0.00
74536	Dillingham AS	0.00	0.00	0.00	0.00	0.00	0.00
75636	Fort Yukon AS	0.00	0.00	0.00	0.00	0.00	0.00
75616	Galena Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
74505	Homer Visitor Center AS	1.00	0.00	0.00	0.00	0.00	1.00
71440	Juneau Fish and Wildlife Field Office	0.00	0.00	0.00	0.00	0.00	0.00
72138	Juneau Hangar Wildlife Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
71441	Ketchikan Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
74513	King Salmon AS	0.00	0.00	0.00	0.00	0.00	0.00
74533	Kodiak AS	0.00	0.00	0.00	0.00	0.00	0.00
74531	Kodiak Office	0.00	0.00	0.00	0.00	0.00	0.00
75626	Kotzebue AS	0.00	0.00	0.00	0.00	0.00	0.00
75606	McGrath AS	0.00	0.00	0.00	0.00	0.00	0.00
75631	Tok AS	0.00	0.00	0.00	0.00	0.00	0.00
	Total:	1.00	0.00	0.00	0.00	0.00	1.00
		100%	0%	0%	0%	0%	

Low Priority (API<60) - Condition Class (Length in LNFT)

Administrative Site	Excellent	Good	Fair	Poor	Failed	Total
Aleutian Islands Unit	0.00	0.00	0.00	0.00	0.00	0.00
Aviation Manager	0.00	0.00	0.00	0.00	0.00	0.00
Bethel Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
Bettles AS	0.00	0.00	0.00	0.00	0.00	0.00
Cold Bay Hangar	0.00	0.00	0.00	0.00	0.00	0.00
Dillingham AS	0.00	0.00	0.00	0.00	0.00	0.00
Fort Yukon AS	0.00	0.00	0.00	0.00	0.00	0.00
Galena Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
Homer Visitor Center AS	0.00	0.00	0.00	0.00	0.00	0.00
Juneau Fish and Wildlife Field Office	0.00	0.00	0.00	0.00	0.00	0.00
Juneau Hangar Wildlife Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
Ketchikan Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
King Salmon AS	0.00	0.00	0.00	0.00	0.00	0.00
Kodiak AS	0.00	0.00	0.00	0.00	0.00	0.00
Kodiak Office	0.00	0.00	0.00	0.00	0.00	0.00
Kotzebue AS	0.00	0.00	0.00	0.00	0.00	0.00
McGrath AS	0.00	0.00	0.00	0.00	0.00	0.00
Tok AS	0.00	0.00	0.00	0.00	0.00	0.00
Total:	0.00	0.00	0.00	0.00	0.00	0.00
	NA	NA	NA	NA	NA	

Investment Strategy:

The distribution of Assets by API vs FCI is:



Asset: 40760800 Trail Bridges

Inventory Summary:

The inventory is distributed across the region as follows:

ID	Administrative Site	Size in SQYD	Count	Replace Value
74502	Aleutian Islands Unit	0.00	0	$0
70134	Aviation Manager	0.00	0	$0
74541	Bethel Administrative Site	0.00	0	$0
75611	Bettles AS	0.00	0	$0
72137	Cold Bay Hangar	0.00	0	$0
74536	Dillingham AS	0.00	0	$0
75636	Fort Yukon AS	0.00	0	$0
75616	Galena Administrative Site	0.00	0	$0
74505	Homer Visitor Center AS	122.22	1	$344,346
71440	Juneau Fish and Wildlife Field Office	0.00	0	$0
72138	Juneau Hangar Wildlife Administrative Site	0.00	0	$0
71441	Ketchikan Administrative Site	0.00	0	$0
74513	King Salmon AS	0.00	0	$0
74533	Kodiak AS	0.00	0	$0
74531	Kodiak Office	0.00	0	$0
75626	Kotzebue AS	0.00	0	$0
75606	McGrath AS	0.00	0	$0
75631	Tok AS	0.00	0	$0
	Total:	122.22	1	344,346

Class	FCI Range
Excellent	<=.10
Good	.10 - .15
Fair	.15 - .50
Poor	.50 - .70
Failed	> .70

Condition:

These assets have the following accumulated deferred maintenance and are in the condition class noted

ID	Administrative Site	Deferred Maint.
74502	Aleutian Islands Unit	$0
70134	Aviation Manager	$0
74541	Bethel Administrative Site	$0
75611	Bettles AS	$0
72137	Cold Bay Hangar	$0
74536	Dillingham AS	$0
75636	Fort Yukon AS	$0
75616	Galena Administrative Site	$0
74505	Homer Visitor Center AS	$0
71440	Juneau Fish and Wildlife Field Office	$0
72138	Juneau Hangar Wildlife Administrative Site	$0
71441	Ketchikan Administrative Site	$0
74513	King Salmon AS	$0
74533	Kodiak AS	$0
74531	Kodiak Office	$0
75626	Kotzebue AS	$0
75606	McGrath AS	$0
75631	Tok AS	$0
	Total:	$0
	Summary FCI (DM/CRV)	0.00

High Priority (API>=60) - Condition Class (Size in SQYD)

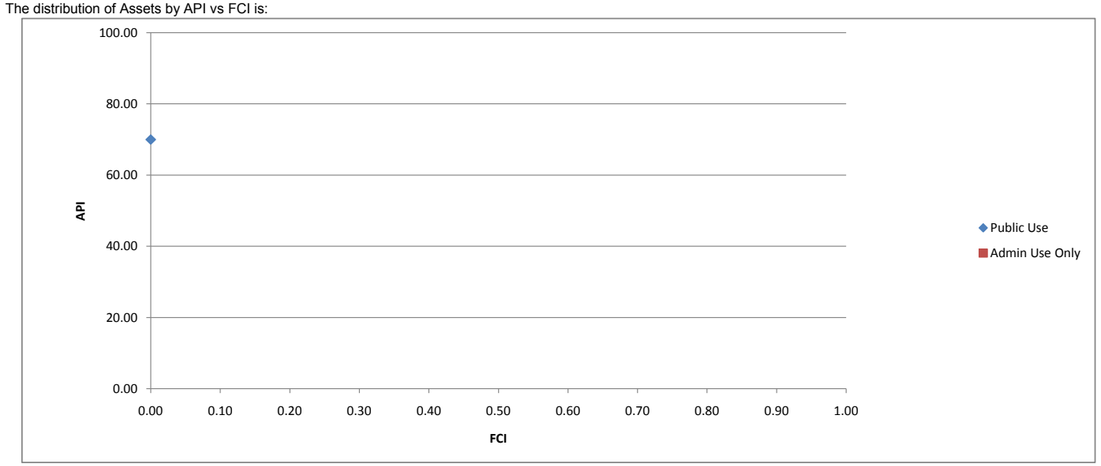
ID	Administrative Site	Excellent	Good	Fair	Poor	Failed	Total
74502	Aleutian Islands Unit	0.00	0.00	0.00	0.00	0.00	0.00
70134	Aviation Manager	0.00	0.00	0.00	0.00	0.00	0.00
74541	Bethel Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
75611	Bettles AS	0.00	0.00	0.00	0.00	0.00	0.00
72137	Cold Bay Hangar	0.00	0.00	0.00	0.00	0.00	0.00
74536	Dillingham AS	0.00	0.00	0.00	0.00	0.00	0.00
75636	Fort Yukon AS	0.00	0.00	0.00	0.00	0.00	0.00
75616	Galena Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
74505	Homer Visitor Center AS	122.22	0.00	0.00	0.00	0.00	122.22
71440	Juneau Fish and Wildlife Field Office	0.00	0.00	0.00	0.00	0.00	0.00
72138	Juneau Hangar Wildlife Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
71441	Ketchikan Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
74513	King Salmon AS	0.00	0.00	0.00	0.00	0.00	0.00
74533	Kodiak AS	0.00	0.00	0.00	0.00	0.00	0.00
74531	Kodiak Office	0.00	0.00	0.00	0.00	0.00	0.00
75626	Kotzebue AS	0.00	0.00	0.00	0.00	0.00	0.00
75606	McGrath AS	0.00	0.00	0.00	0.00	0.00	0.00
75631	Tok AS	0.00	0.00	0.00	0.00	0.00	0.00
	Total:	122.22	0.00	0.00	0.00	0.00	122.22
		100%	0%	0%	0%	0%	

Low Priority (API<60) - Condition Class (Size in SQYD)

Administrative Site	Excellent	Good	Fair	Poor	Failed	Total
Aleutian Islands Unit	0.00	0.00	0.00	0.00	0.00	0.00
Aviation Manager	0.00	0.00	0.00	0.00	0.00	0.00
Bethel Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
Bettles AS	0.00	0.00	0.00	0.00	0.00	0.00
Cold Bay Hangar	0.00	0.00	0.00	0.00	0.00	0.00
Dillingham AS	0.00	0.00	0.00	0.00	0.00	0.00
Fort Yukon AS	0.00	0.00	0.00	0.00	0.00	0.00
Galena Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
Homer Visitor Center AS	0.00	0.00	0.00	0.00	0.00	0.00
Juneau Fish and Wildlife Field Office	0.00	0.00	0.00	0.00	0.00	0.00
Juneau Hangar Wildlife Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
Ketchikan Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
King Salmon AS	0.00	0.00	0.00	0.00	0.00	0.00
Kodiak AS	0.00	0.00	0.00	0.00	0.00	0.00
Kodiak Office	0.00	0.00	0.00	0.00	0.00	0.00
Kotzebue AS	0.00	0.00	0.00	0.00	0.00	0.00
McGrath AS	0.00	0.00	0.00	0.00	0.00	0.00
Tok AS	0.00	0.00	0.00	0.00	0.00	0.00
Total:	0.00	0.00	0.00	0.00	0.00	0.00
	NA	NA	NA	NA	NA	

Investment Strategy:

The distribution of Assets by API vs FCI is:



Asset: 40760700 Culvert Road Bridge

Inventory Summary:

The inventory is distributed across the region as follows:

ID	Administrative Site	Size in SQYD	Count	Replace Value
74502	Aleutian Islands Unit	0.00	0	$0
70134	Aviation Manager	0.00	0	$0
74541	Bethel Administrative Site	0.00	0	$0
75611	Bettles AS	0.00	0	$0
72137	Cold Bay Hangar	0.00	0	$0
74536	Dillingham AS	0.00	0	$0
75636	Fort Yukon AS	0.00	0	$0
75616	Galena Administrative Site	0.00	0	$0
74505	Homer Visitor Center AS	0.00	0	$0
71440	Juneau Fish and Wildlife Field Office	0.00	0	$0
72138	Juneau Hangar Wildlife Administrative Site	0.00	0	$0
71441	Ketchikan Administrative Site	0.00	0	$0
74513	King Salmon AS	0.00	0	$0
74533	Kodiak AS	0.00	0	$0
74531	Kodiak Office	0.00	0	$0
75626	Kotzebue AS	0.00	0	$0
75606	McGrath AS	0.00	0	$0
75631	Tok AS	0.00	0	$0
	Total:	0.00	0	$0

Class	FCI Range
Excellent	<=.10
Good	.10 - .15
Fair	.15 - .50
Poor	.50 - .70
Failed	> .70

Condition:

These assets have the following accumulated deferred maintenance and are in the condition class noted

ID	Administrative Site	Deferred Maint.
74502	Aleutian Islands Unit	$0
70134	Aviation Manager	$0
74541	Bethel Administrative Site	$0
75611	Bettles AS	$0
72137	Cold Bay Hangar	$0
74536	Dillingham AS	$0
75636	Fort Yukon AS	$0
75616	Galena Administrative Site	$0
74505	Homer Visitor Center AS	$0
71440	Juneau Fish and Wildlife Field Office	$0
72138	Juneau Hangar Wildlife Administrative Site	$0
71441	Ketchikan Administrative Site	$0
74513	King Salmon AS	$0
74533	Kodiak AS	$0
74531	Kodiak Office	$0
75626	Kotzebue AS	$0
75606	McGrath AS	$0
75631	Tok AS	$0
	Total:	$0
	Summary FCI (DM/CRV)	#DIV/0!

High Priority (API>=60) - Condition Class (Size in SQYD)

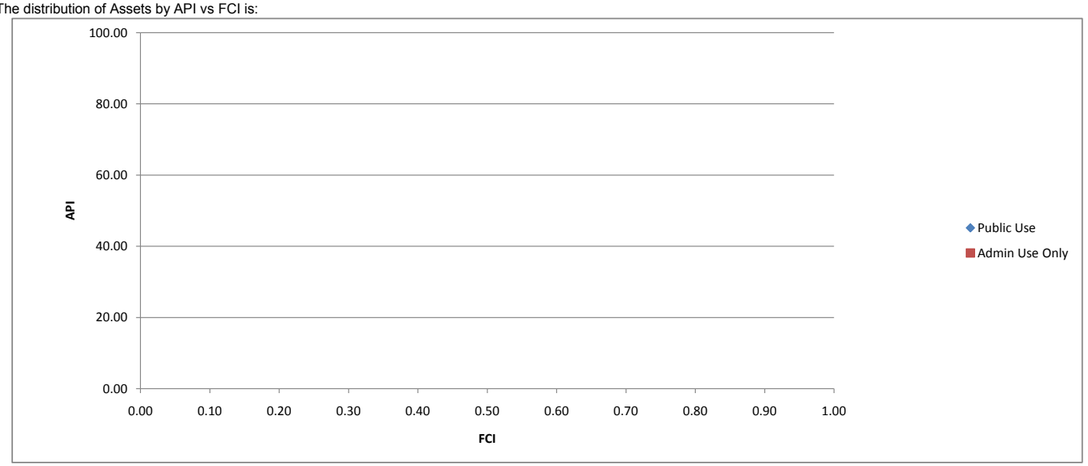
ID	Administrative Site	Excellent	Good	Fair	Poor	Failed	Total
74502	Aleutian Islands Unit	0.00	0.00	0.00	0.00	0.00	0.00
70134	Aviation Manager	0.00	0.00	0.00	0.00	0.00	0.00
74541	Bethel Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
75611	Bettles AS	0.00	0.00	0.00	0.00	0.00	0.00
72137	Cold Bay Hangar	0.00	0.00	0.00	0.00	0.00	0.00
74536	Dillingham AS	0.00	0.00	0.00	0.00	0.00	0.00
75636	Fort Yukon AS	0.00	0.00	0.00	0.00	0.00	0.00
75616	Galena Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
74505	Homer Visitor Center AS	0.00	0.00	0.00	0.00	0.00	0.00
71440	Juneau Fish and Wildlife Field Office	0.00	0.00	0.00	0.00	0.00	0.00
72138	Juneau Hangar Wildlife Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
71441	Ketchikan Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
74513	King Salmon AS	0.00	0.00	0.00	0.00	0.00	0.00
74533	Kodiak AS	0.00	0.00	0.00	0.00	0.00	0.00
74531	Kodiak Office	0.00	0.00	0.00	0.00	0.00	0.00
75626	Kotzebue AS	0.00	0.00	0.00	0.00	0.00	0.00
75606	McGrath AS	0.00	0.00	0.00	0.00	0.00	0.00
75631	Tok AS	0.00	0.00	0.00	0.00	0.00	0.00
	Total:	0.00	0.00	0.00	0.00	0.00	0.00
		NA	NA	NA	NA	NA	

Low Priority (API<60) - Condition Class (Size in SQYD)

Administrative Site	Excellent	Good	Fair	Poor	Failed	Total
Aleutian Islands Unit	0.00	0.00	0.00	0.00	0.00	0.00
Aviation Manager	0.00	0.00	0.00	0.00	0.00	0.00
Bethel Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
Bettles AS	0.00	0.00	0.00	0.00	0.00	0.00
Cold Bay Hangar	0.00	0.00	0.00	0.00	0.00	0.00
Dillingham AS	0.00	0.00	0.00	0.00	0.00	0.00
Fort Yukon AS	0.00	0.00	0.00	0.00	0.00	0.00
Galena Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
Homer Visitor Center AS	0.00	0.00	0.00	0.00	0.00	0.00
Juneau Fish and Wildlife Field Office	0.00	0.00	0.00	0.00	0.00	0.00
Juneau Hangar Wildlife Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
Ketchikan Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
King Salmon AS	0.00	0.00	0.00	0.00	0.00	0.00
Kodiak AS	0.00	0.00	0.00	0.00	0.00	0.00
Kodiak Office	0.00	0.00	0.00	0.00	0.00	0.00
Kotzebue AS	0.00	0.00	0.00	0.00	0.00	0.00
McGrath AS	0.00	0.00	0.00	0.00	0.00	0.00
Tok AS	0.00	0.00	0.00	0.00	0.00	0.00
Total:	0.00	0.00	0.00	0.00	0.00	0.00
	NA	NA	NA	NA	NA	

Investment Strategy:

The distribution of Assets by API vs FCI is:



Asset: 40760500 Road Bridges

Inventory Summary:

The inventory is distributed across the region as follows:

ID	Administrative Site	Size in SQYD	Count	Replace Value
74502	Aleutian Islands Unit	0.00	0	$0
70134	Aviation Manager	0.00	0	$0
74541	Bethel Administrative Site	0.00	0	$0
75611	Bettles AS	0.00	0	$0
72137	Cold Bay Hangar	0.00	0	$0
74536	Dillingham AS	0.00	0	$0
75636	Fort Yukon AS	0.00	0	$0
75616	Galena Administrative Site	0.00	0	$0
74505	Homer Visitor Center AS	0.00	0	$0
71440	Juneau Fish and Wildlife Field Office	0.00	0	$0
72138	Juneau Hangar Wildlife Administrative Site	0.00	0	$0
71441	Ketchikan Administrative Site	0.00	0	$0
74513	King Salmon AS	0.00	0	$0
74533	Kodiak AS	0.00	0	$0
74531	Kodiak Office	0.00	0	$0
75626	Kotzebue AS	0.00	0	$0
75606	McGrath AS	0.00	0	$0
75631	Tok AS	0.00	0	$0
	Total:	0.00	0	0

Class	FCI Range
Excellent	<=.10
Good	.10 - .15
Fair	.15 - .50
Poor	.50 - .70
Failed	> .70

Condition:

These assets have the following accumulated deferred maintenance and are in the condition class noted

ID	Administrative Site	Deferred Maint.
74502	Aleutian Islands Unit	$0
70134	Aviation Manager	$0
74541	Bethel Administrative Site	$0
75611	Bettles AS	$0
72137	Cold Bay Hangar	$0
74536	Dillingham AS	$0
75636	Fort Yukon AS	$0
75616	Galena Administrative Site	$0
74505	Homer Visitor Center AS	$0
71440	Juneau Fish and Wildlife Field Office	$0
72138	Juneau Hangar Wildlife Administrative Site	$0
71441	Ketchikan Administrative Site	$0
74513	King Salmon AS	$0
74533	Kodiak AS	$0
74531	Kodiak Office	$0
75626	Kotzebue AS	$0
75606	McGrath AS	$0
75631	Tok AS	$0
	Total:	$0
	Summary FCI (DM/CRV)	#DIV/0!

High Priority (API>=60) - Condition Class (Size in SQYD)

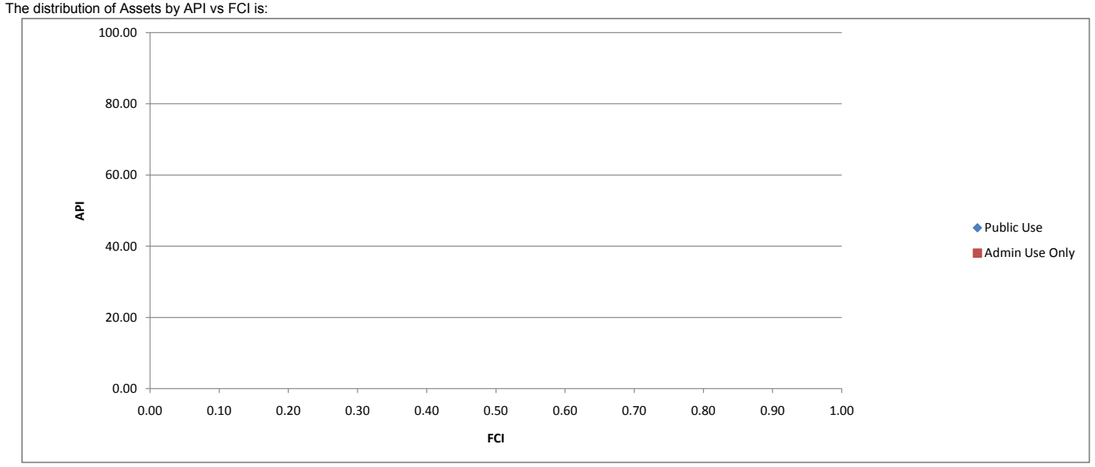
ID	Administrative Site	Excellent	Good	Fair	Poor	Failed	Total
74502	Aleutian Islands Unit	0.00	0.00	0.00	0.00	0.00	0.00
70134	Aviation Manager	0.00	0.00	0.00	0.00	0.00	0.00
74541	Bethel Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
75611	Bettles AS	0.00	0.00	0.00	0.00	0.00	0.00
72137	Cold Bay Hangar	0.00	0.00	0.00	0.00	0.00	0.00
74536	Dillingham AS	0.00	0.00	0.00	0.00	0.00	0.00
75636	Fort Yukon AS	0.00	0.00	0.00	0.00	0.00	0.00
75616	Galena Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
74505	Homer Visitor Center AS	0.00	0.00	0.00	0.00	0.00	0.00
71440	Juneau Fish and Wildlife Field Office	0.00	0.00	0.00	0.00	0.00	0.00
72138	Juneau Hangar Wildlife Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
71441	Ketchikan Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
74513	King Salmon AS	0.00	0.00	0.00	0.00	0.00	0.00
74533	Kodiak AS	0.00	0.00	0.00	0.00	0.00	0.00
74531	Kodiak Office	0.00	0.00	0.00	0.00	0.00	0.00
75626	Kotzebue AS	0.00	0.00	0.00	0.00	0.00	0.00
75606	McGrath AS	0.00	0.00	0.00	0.00	0.00	0.00
75631	Tok AS	0.00	0.00	0.00	0.00	0.00	0.00
	Total:	0.00	0.00	0.00	0.00	0.00	0.00
		NA	NA	NA	NA	NA	

Low Priority (API<60) - Condition Class (Size in SQYD)

Administrative Site	Excellent	Good	Fair	Poor	Failed	Total
Aleutian Islands Unit	0.00	0.00	0.00	0.00	0.00	0.00
Aviation Manager	0.00	0.00	0.00	0.00	0.00	0.00
Bethel Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
Bettles AS	0.00	0.00	0.00	0.00	0.00	0.00
Cold Bay Hangar	0.00	0.00	0.00	0.00	0.00	0.00
Dillingham AS	0.00	0.00	0.00	0.00	0.00	0.00
Fort Yukon AS	0.00	0.00	0.00	0.00	0.00	0.00
Galena Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
Homer Visitor Center AS	0.00	0.00	0.00	0.00	0.00	0.00
Juneau Fish and Wildlife Field Office	0.00	0.00	0.00	0.00	0.00	0.00
Juneau Hangar Wildlife Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
Ketchikan Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
King Salmon AS	0.00	0.00	0.00	0.00	0.00	0.00
Kodiak AS	0.00	0.00	0.00	0.00	0.00	0.00
Kodiak Office	0.00	0.00	0.00	0.00	0.00	0.00
Kotzebue AS	0.00	0.00	0.00	0.00	0.00	0.00
McGrath AS	0.00	0.00	0.00	0.00	0.00	0.00
Tok AS	0.00	0.00	0.00	0.00	0.00	0.00
Total:	0.00	0.00	0.00	0.00	0.00	0.00
	NA	NA	NA	NA	NA	

Investment Strategy:

The distribution of Assets by API vs FCI is:



Asset: 40130300 Docks Floating

Inventory Summary:

The inventory is distributed across the region as follows:

ID	Administrative Site	Size in SQYD	Count	Replace Value
74502	Aleutian Islands Unit	0.00	0	$0
70134	Aviation Manager	0.00	0	$0
74541	Bethel Administrative Site	0.00	0	$0
75611	Bettles AS	0.00	0	$0
72137	Cold Bay Hangar	0.00	0	$0
74536	Dillingham AS	0.00	0	$0
75636	Fort Yukon AS	0.00	0	$0
75616	Galena Administrative Site	84.00	1	$17,076
74505	Homer Visitor Center AS	0.00	0	$0
71440	Juneau Fish and Wildlife Field Office	0.00	0	$0
72138	Juneau Hangar Wildlife Administrative Site	0.00	0	$0
71441	Ketchikan Administrative Site	0.00	0	$0
74513	King Salmon AS	0.00	0	$0
74533	Kodiak AS	0.00	0	$0
74531	Kodiak Office	0.00	0	$0
75626	Kotzebue AS	0.00	0	$0
75606	McGrath AS	0.00	0	$0
75631	Tok AS	0.00	0	$0
	Total:	84.00	1	$17,076

Class	FCI Range
Excellent	<=.10
Good	.10 - .15
Fair	.15 - .50
Poor	.50 - .70
Failed	> .70

Condition:

These assets have the following accumulated deferred maintenance and are in the condition class noted

ID	Administrative Site	Deferred Maint.
74502	Aleutian Islands Unit	$0
70134	Aviation Manager	$0
74541	Bethel Administrative Site	$0
75611	Bettles AS	$0
72137	Cold Bay Hangar	$0
74536	Dillingham AS	$0
75636	Fort Yukon AS	$0
75616	Galena Administrative Site	$0
74505	Homer Visitor Center AS	$0
71440	Juneau Fish and Wildlife Field Office	$0
72138	Juneau Hangar Wildlife Administrative Site	$0
71441	Ketchikan Administrative Site	$0
74513	King Salmon AS	$0
74533	Kodiak AS	$0
74531	Kodiak Office	$0
75626	Kotzebue AS	$0
75606	McGrath AS	$0
75631	Tok AS	$0
	Total:	$0
	Summary FCI (DM/CRV)	0.00

High Priority (API>=60) - Condition Class (Size in SQYD)

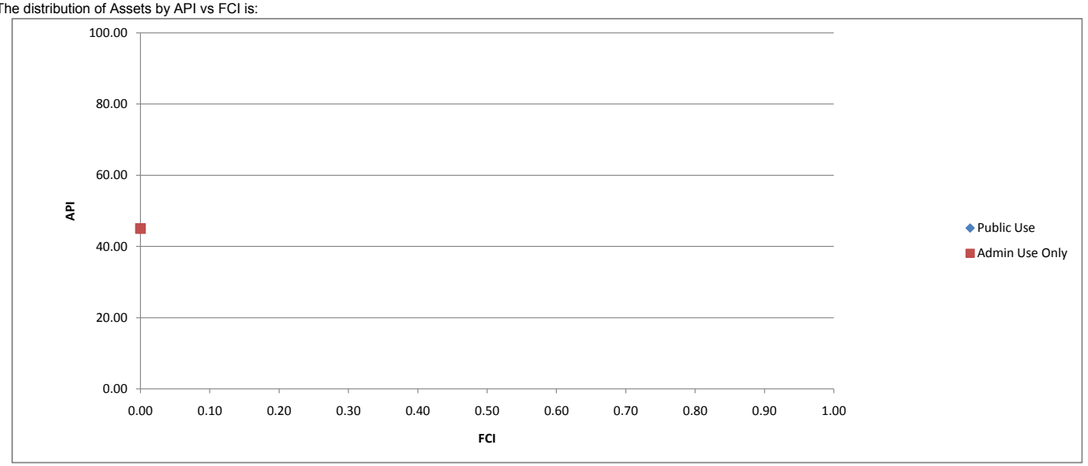
ID	Administrative Site	Excellent	Good	Fair	Poor	Failed	Total
74502	Aleutian Islands Unit	0.00	0.00	0.00	0.00	0.00	0.00
70134	Aviation Manager	0.00	0.00	0.00	0.00	0.00	0.00
74541	Bethel Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
75611	Bettles AS	0.00	0.00	0.00	0.00	0.00	0.00
72137	Cold Bay Hangar	0.00	0.00	0.00	0.00	0.00	0.00
74536	Dillingham AS	0.00	0.00	0.00	0.00	0.00	0.00
75636	Fort Yukon AS	0.00	0.00	0.00	0.00	0.00	0.00
75616	Galena Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
74505	Homer Visitor Center AS	0.00	0.00	0.00	0.00	0.00	0.00
71440	Juneau Fish and Wildlife Field Office	0.00	0.00	0.00	0.00	0.00	0.00
72138	Juneau Hangar Wildlife Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
71441	Ketchikan Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
74513	King Salmon AS	0.00	0.00	0.00	0.00	0.00	0.00
74533	Kodiak AS	0.00	0.00	0.00	0.00	0.00	0.00
74531	Kodiak Office	0.00	0.00	0.00	0.00	0.00	0.00
75626	Kotzebue AS	0.00	0.00	0.00	0.00	0.00	0.00
75606	McGrath AS	0.00	0.00	0.00	0.00	0.00	0.00
75631	Tok AS	0.00	0.00	0.00	0.00	0.00	0.00
	Total:	0.00	0.00	0.00	0.00	0.00	0.00
		NA	NA	NA	NA	NA	

Low Priority (API<60) - Condition Class (Size in SQYD)

Administrative Site	Excellent	Good	Fair	Poor	Failed	Total
Aleutian Islands Unit	0.00	0.00	0.00	0.00	0.00	0.00
Aviation Manager	0.00	0.00	0.00	0.00	0.00	0.00
Bethel Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
Bettles AS	0.00	0.00	0.00	0.00	0.00	0.00
Cold Bay Hangar	0.00	0.00	0.00	0.00	0.00	0.00
Dillingham AS	0.00	0.00	0.00	0.00	0.00	0.00
Fort Yukon AS	0.00	0.00	0.00	0.00	0.00	0.00
Galena Administrative Site	84.00	0.00	0.00	0.00	0.00	84.00
Homer Visitor Center AS	0.00	0.00	0.00	0.00	0.00	0.00
Juneau Fish and Wildlife Field Office	0.00	0.00	0.00	0.00	0.00	0.00
Juneau Hangar Wildlife Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
Ketchikan Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
King Salmon AS	0.00	0.00	0.00	0.00	0.00	0.00
Kodiak AS	0.00	0.00	0.00	0.00	0.00	0.00
Kodiak Office	0.00	0.00	0.00	0.00	0.00	0.00
Kotzebue AS	0.00	0.00	0.00	0.00	0.00	0.00
McGrath AS	0.00	0.00	0.00	0.00	0.00	0.00
Tok AS	0.00	0.00	0.00	0.00	0.00	0.00
Total:	84.00	0.00	0.00	0.00	0.00	84.00
	100%	0%	0%	0%	0%	

Investment Strategy:

The distribution of Assets by API vs FCI is:



Asset: 40130200 Docks Stationary

Inventory Summary:

The inventory is distributed across the region as follows:

ID	Administrative Site	Size in SQFT	Count	Replace Value
74502	Aleutian Islands Unit	1,495.56	2	$13,485,676
70134	Aviation Manager	0.00	0	$0
74541	Bethel Administrative Site	0.00	0	$0
75611	Bettles AS	0.00	0	$0
72137	Cold Bay Hangar	0.00	0	$0
74536	Dillingham AS	0.00	0	$0
75636	Fort Yukon AS	0.00	0	$0
75616	Galena Administrative Site	0.00	0	$0
74505	Homer Visitor Center AS	0.00	0	$0
71440	Juneau Fish and Wildlife Field Office	300.67	1	$744,850
72138	Juneau Hangar Wildlife Administrative Site	0.00	0	$0
71441	Ketchikan Administrative Site	693.88	1	$1,296,942
74513	King Salmon AS	0.00	0	$0
74533	Kodiak AS	0.00	0	$0
74531	Kodiak Office	0.00	0	$0
75626	Kotzebue AS	0.00	0	$0
75606	McGrath AS	0.00	0	$0
75631	Tok AS	0.00	0	$0
	Total:	2,490.11	4	15,527,468

Class	FCI Range
Excellent	<=.10
Good	.10 - .15
Fair	.15 - .50
Poor	.50 - .70
Failed	> .70

Condition:

These assets have the following accumulated deferred maintenance and are in the condition class noted

ID	Administrative Site	Deferred Maint.
74502	Aleutian Islands Unit	$0
70134	Aviation Manager	$0
74541	Bethel Administrative Site	$0
75611	Bettles AS	$0
72137	Cold Bay Hangar	$0
74536	Dillingham AS	$0
75636	Fort Yukon AS	$0
75616	Galena Administrative Site	$0
74505	Homer Visitor Center AS	$0
71440	Juneau Fish and Wildlife Field Office	$0
72138	Juneau Hangar Wildlife Administrative Site	$0
71441	Ketchikan Administrative Site	$0
74513	King Salmon AS	$0
74533	Kodiak AS	$0
74531	Kodiak Office	$0
75626	Kotzebue AS	$0
75606	McGrath AS	$0
75631	Tok AS	$0
	Total:	$0
	Summary FCI (DM/CRV)	0.00

High Priority (API>=60) - Condition Class (Size in SQFT)

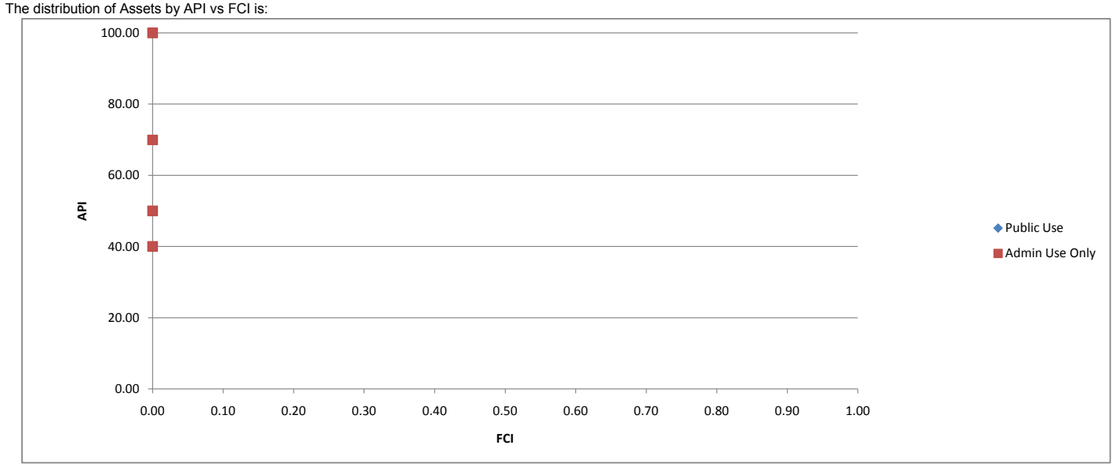
ID	Administrative Site	Excellent	Good	Fair	Poor	Failed	Total
74502	Aleutian Islands Unit	94.67	0.00	0.00	0.00	0.00	94.67
70134	Aviation Manager	0.00	0.00	0.00	0.00	0.00	0.00
74541	Bethel Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
75611	Bettles AS	0.00	0.00	0.00	0.00	0.00	0.00
72137	Cold Bay Hangar	0.00	0.00	0.00	0.00	0.00	0.00
74536	Dillingham AS	0.00	0.00	0.00	0.00	0.00	0.00
75636	Fort Yukon AS	0.00	0.00	0.00	0.00	0.00	0.00
75616	Galena Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
74505	Homer Visitor Center AS	0.00	0.00	0.00	0.00	0.00	0.00
71440	Juneau Fish and Wildlife Field Office	0.00	0.00	0.00	0.00	0.00	0.00
72138	Juneau Hangar Wildlife Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
71441	Ketchikan Administrative Site	693.88	0.00	0.00	0.00	0.00	693.88
74513	King Salmon AS	0.00	0.00	0.00	0.00	0.00	0.00
74533	Kodiak AS	0.00	0.00	0.00	0.00	0.00	0.00
74531	Kodiak Office	0.00	0.00	0.00	0.00	0.00	0.00
75626	Kotzebue AS	0.00	0.00	0.00	0.00	0.00	0.00
75606	McGrath AS	0.00	0.00	0.00	0.00	0.00	0.00
75631	Tok AS	0.00	0.00	0.00	0.00	0.00	0.00
	Total:	788.55	0.00	0.00	0.00	0.00	788.55
		100%	0%	0%	0%	0%	

Low Priority (API<60) - Condition Class (Size in SQFT)

Administrative Site	Excellent	Good	Fair	Poor	Failed	Total
Aleutian Islands Unit	1,400.89	0.00	0.00	0.00	0.00	1,400.89
Aviation Manager	0.00	0.00	0.00	0.00	0.00	0.00
Bethel Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
Bettles AS	0.00	0.00	0.00	0.00	0.00	0.00
Cold Bay Hangar	0.00	0.00	0.00	0.00	0.00	0.00
Dillingham AS	0.00	0.00	0.00	0.00	0.00	0.00
Fort Yukon AS	0.00	0.00	0.00	0.00	0.00	0.00
Galena Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
Homer Visitor Center AS	0.00	0.00	0.00	0.00	0.00	0.00
Juneau Fish and Wildlife Field Office	300.67	0.00	0.00	0.00	0.00	300.67
Juneau Hangar Wildlife Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
Ketchikan Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
King Salmon AS	0.00	0.00	0.00	0.00	0.00	0.00
Kodiak AS	0.00	0.00	0.00	0.00	0.00	0.00
Kodiak Office	0.00	0.00	0.00	0.00	0.00	0.00
Kotzebue AS	0.00	0.00	0.00	0.00	0.00	0.00
McGrath AS	0.00	0.00	0.00	0.00	0.00	0.00
Tok AS	0.00	0.00	0.00	0.00	0.00	0.00
Total:	1,701.56	0.00	0.00	0.00	0.00	1,701.56
	100%	0%	0%	0%	0%	

Investment Strategy:

The distribution of Assets by API vs FCI is:



Asset: 40120200 Airstrip

Inventory Summary:

The inventory is distributed across the region as follows:

ID	Administrative Site	Count	Count	Replace Value
74502	Aleutian Islands Unit	0.00	0	$0
70134	Aviation Manager	0.00	0	$0
74541	Bethel Administrative Site	0.00	0	$0
75611	Bettles AS	0.00	0	$0
72137	Cold Bay Hangar	0.00	0	$0
74536	Dillingham AS	0.00	0	$0
75636	Fort Yukon AS	0.00	0	$0
75616	Galena Administrative Site	0.00	0	$0
74505	Homer Visitor Center AS	0.00	0	$0
71440	Juneau Fish and Wildlife Field Office	0.00	0	$0
72138	Juneau Hangar Wildlife Administrative Site	0.00	0	$0
71441	Ketchikan Administrative Site	0.00	0	$0
74513	King Salmon AS	0.00	0	$0
74533	Kodiak AS	0.00	0	$0
74531	Kodiak Office	0.00	0	$0
75626	Kotzebue AS	0.00	0	$0
75606	McGrath AS	0.00	0	$0
75631	Tok AS	0.00	0	$0
	Total:	0.00	0	0

Class	FCI Range
Excellent	<=.10
Good	.10 - .15
Fair	.15 - .50
Poor	.50 - .70
Failed	> .70

Condition:

These assets have the following accumulated deferred maintenance and are in the condition class noted

ID	Administrative Site	Deferred Maint.
74502	Aleutian Islands Unit	$0
70134	Aviation Manager	$0
74541	Bethel Administrative Site	$0
75611	Bettles AS	$0
72137	Cold Bay Hangar	$0
74536	Dillingham AS	$0
75636	Fort Yukon AS	$0
75616	Galena Administrative Site	$0
74505	Homer Visitor Center AS	$0
71440	Juneau Fish and Wildlife Field Office	$0
72138	Juneau Hangar Wildlife Administrative Site	$0
71441	Ketchikan Administrative Site	$0
74513	King Salmon AS	$0
74533	Kodiak AS	$0
74531	Kodiak Office	$0
75626	Kotzebue AS	$0
75606	McGrath AS	$0
75631	Tok AS	$0
	Total:	$0
	Summary FCI (DM/CRV)	#DIV/0!

High Priority (API>=60) - Condition Class (Count)

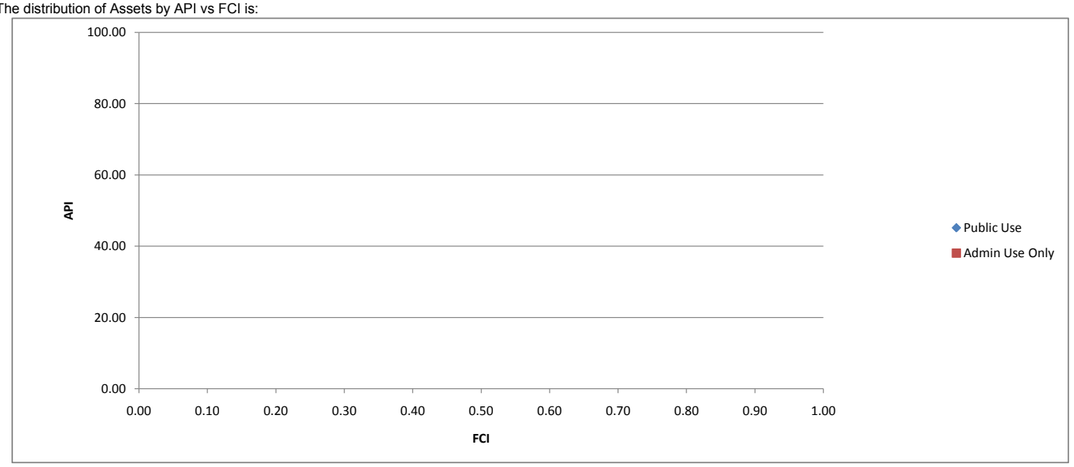
ID	Administrative Site	Excellent	Good	Fair	Poor	Failed	Total
74502	Aleutian Islands Unit	0.00	0.00	0.00	0.00	0.00	0.00
70134	Aviation Manager	0.00	0.00	0.00	0.00	0.00	0.00
74541	Bethel Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
75611	Bettles AS	0.00	0.00	0.00	0.00	0.00	0.00
72137	Cold Bay Hangar	0.00	0.00	0.00	0.00	0.00	0.00
74536	Dillingham AS	0.00	0.00	0.00	0.00	0.00	0.00
75636	Fort Yukon AS	0.00	0.00	0.00	0.00	0.00	0.00
75616	Galena Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
74505	Homer Visitor Center AS	0.00	0.00	0.00	0.00	0.00	0.00
71440	Juneau Fish and Wildlife Field Office	0.00	0.00	0.00	0.00	0.00	0.00
72138	Juneau Hangar Wildlife Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
71441	Ketchikan Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
74513	King Salmon AS	0.00	0.00	0.00	0.00	0.00	0.00
74533	Kodiak AS	0.00	0.00	0.00	0.00	0.00	0.00
74531	Kodiak Office	0.00	0.00	0.00	0.00	0.00	0.00
75626	Kotzebue AS	0.00	0.00	0.00	0.00	0.00	0.00
75606	McGrath AS	0.00	0.00	0.00	0.00	0.00	0.00
75631	Tok AS	0.00	0.00	0.00	0.00	0.00	0.00
	Total:	0.00	0.00	0.00	0.00	0.00	0.00
		NA	NA	NA	NA	NA	

Low Priority (API<60) - Condition Class (Count)

Administrative Site	Excellent	Good	Fair	Poor	Failed	Total
Aleutian Islands Unit	0.00	0.00	0.00	0.00	0.00	0.00
Aviation Manager	0.00	0.00	0.00	0.00	0.00	0.00
Bethel Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
Bettles AS	0.00	0.00	0.00	0.00	0.00	0.00
Cold Bay Hangar	0.00	0.00	0.00	0.00	0.00	0.00
Dillingham AS	0.00	0.00	0.00	0.00	0.00	0.00
Fort Yukon AS	0.00	0.00	0.00	0.00	0.00	0.00
Galena Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
Homer Visitor Center AS	0.00	0.00	0.00	0.00	0.00	0.00
Juneau Fish and Wildlife Field Office	0.00	0.00	0.00	0.00	0.00	0.00
Juneau Hangar Wildlife Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
Ketchikan Administrative Site	0.00	0.00	0.00	0.00	0.00	0.00
King Salmon AS	0.00	0.00	0.00	0.00	0.00	0.00
Kodiak AS	0.00	0.00	0.00	0.00	0.00	0.00
Kodiak Office	0.00	0.00	0.00	0.00	0.00	0.00
Kotzebue AS	0.00	0.00	0.00	0.00	0.00	0.00
McGrath AS	0.00	0.00	0.00	0.00	0.00	0.00
Tok AS	0.00	0.00	0.00	0.00	0.00	0.00
Total:	0.00	0.00	0.00	0.00	0.00	0.00
	NA	NA	NA	NA	NA	

Investment Strategy:

The distribution of Assets by API vs FCI is:



Appendix C

Region 7 Refuge Transportation Factsheets

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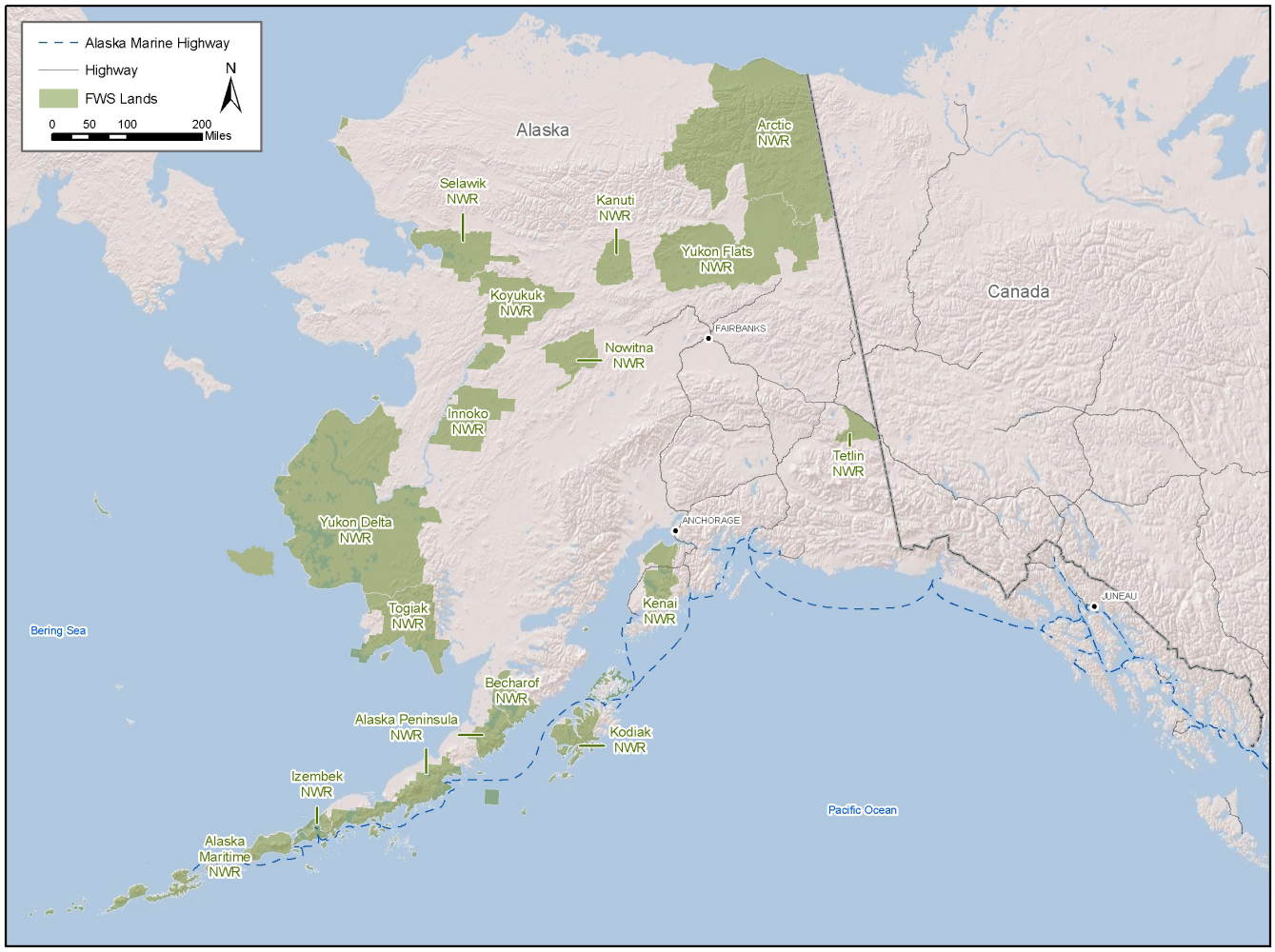
National Wildlife Refuge Factsheet

Introduction

The U.S. Fish and Wildlife Service (FWS) Region 7 factsheets were prepared to provide a high level overview of transportation systems within each refuge. Information includes location, size, number and condition of transportation assets, transportation planning needs, as well as other relevant data.

U.S. Fish and Wildlife Region 7 Refuges



Data Sources

Data used in the factsheets came from local, regional, and national sources including:

Data Inputs

Source	Data	Date
Alaska Department of Transportation and Public Facilities (ADOT&PF)	ADOT&PF regions, reported crashes, Alaska Marine Highway, highways and roads	2003 to 2007
Refuge Interviews	Access points, transportation needs, alternative transportation opportunities, climate change threat, as well as natural and cultural known and possible threats	March 2011
U.S. Census	Alaska boroughs, and cities	2010
Service Asset Management System (SAMMS)	Roads (paved), roads (dirt), roads (gravel), parking lot, trails (paved), trails (unpaved), boardwalks, bridges (road), bridges (trail), bridges (culvert), docks (floating), docks (stationary), airstrips, asset priority index (API), and facility condition index (FCI)	July 2011
U.S. Fish and Wildlife Service Region 7 Long Range Transportation Plan (LRTP)	Transportation needs, proximity to urban areas, proximity to other FLMAs	Internal Draft, August 2009
FWS	Refuges, acreage	2010
Federal Highway Administration (FHWA)	Scenic byways	2010
Refuge Comprehensive Conservation Plans (CCP)	Gateway communities, existing partnerships	Various publish dates
Refuge Annual Performance Plan	Visitation count	2009
FWS Annual Performance Handbook	Visitation count methodology	2009
USGS	Basemap	Various publish dates

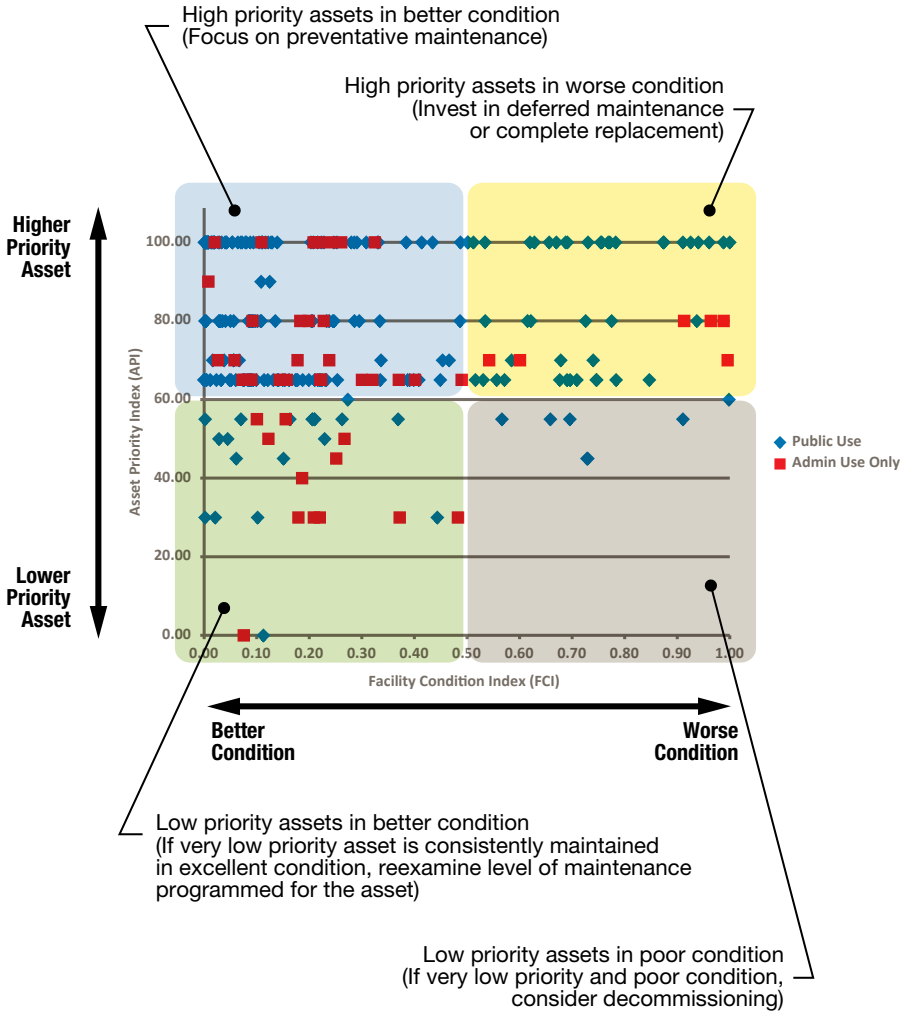
API/FCI Charts

Included in the factsheets are service asset maintenance management system (SAMMS) charts. SAMMS charts show the relationship between the asset priority index (API) and facility condition index (FCI). API is a ranking for how critical assets are in serving FWS mission and

goals. Assets with an API closer to 100 are of higher priority whereas assets with ratings closer to 0 are of lower priority. Among other purposes, FWS uses the API metric to ensure that maintenance activities focus on the highest priority assets. Similarly, API is used to identify the for possible decommissioning. The FCI is the ratio of the deferred maintenance costs to replacement value; therefore, a larger FCI value indicates higher costs to bring an asset back to full repair, while a lower value indicates that less cost is required to bring an asset back to full repair.

As illustrated in the "How to Read API versus FCI" chart below, API and FCI results can be thought of as four quadrants. The top-left quadrant represents assets that are high priority and in better condition, and should therefore receive preventative maintenance. Assets in the top-right quadrant are higher-priority assets in poor condition, and should therefore be repaired or replaced. Assets in the bottom-left quadrant can be classified as lower-priority assets in good condition. These assets can perhaps wait to receive additional maintenance if maintenance funds are needed elsewhere. Assets in the bottom-right quadrant are facilities in poor condition and of low priority. Management strategies for these assets include keeping poor condition as the target condition or considering these assets for decommissioning.

How to Read Asset Priority Index vs. Facility Condition Index Charts



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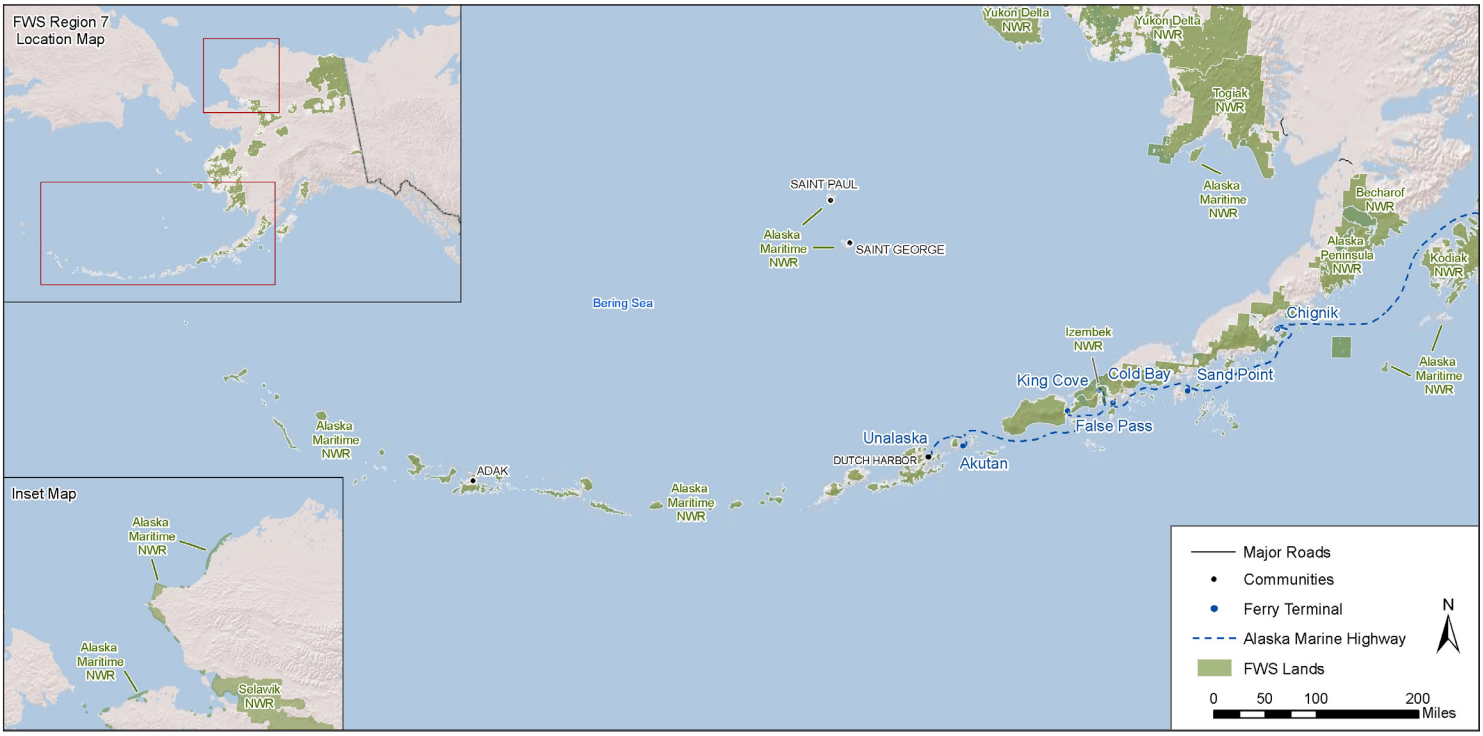
U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Alaska Maritime National Wildlife Refuge



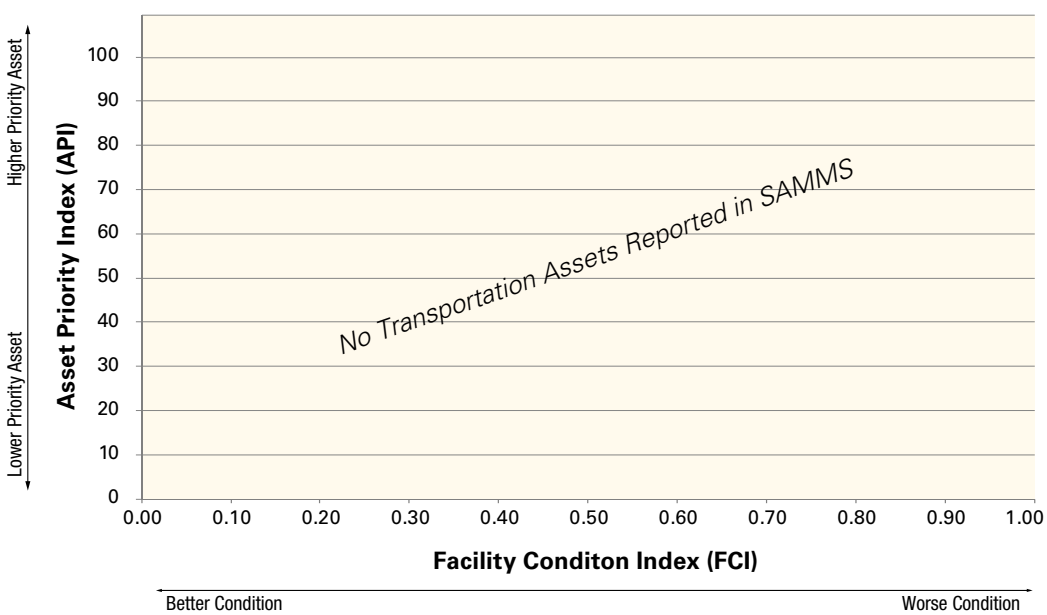
Access Methods and Locations	Alaska Marine Highway, aircraft, Dutch Harbor, boats from Shelikof Straight, Bering Sea, or Pacific Ocean
Nearby Federal Land Management Agencies	Izembek NWR, Kodiak NWR, Alaska Peninsula/Becharof NWR, Aniakchak National Monument and Preserve, Katmai National Park and Preserve
Alaska DOT Region and Borough	ADOT&PF Central Region; Aleutians West Borough
Gateway Communities	Adak, Akutan, Atka, Cold Bay, Dutch Harbor, False Pass, Homer, King Cove, Kodiak, Point Hope, St. George, St. Paul, Sitka, Sand Point, Umnak, and Unalaska
Connections to State or National Trails	None
Scenic Byway	Alaska Marine Highway (State; National Scenic Byway)
Air Quality Non-Attainment Area	None

Last updated October 2011

	Alaska Maritime NWR	Region 7 Total	All Other Regions Total
Acres	3,417,757	76,837,023	331,751,420
Traffic Counts	Not available	Not available	Not available
Visitation Count	120,000	1,407,698	43,074,701
Visitation Count Methodology	FWS Annual Performance Plan Workbook		
Safety - Reported Crashes	Vehicle - None reported (2003 to 2007, ADOT&PF) Airplane - 16 (1990 to 2011, FAA)	Vehicle - 1,811 (2003 to 2007, ADOT&PF) Airplane - 145 (1990 to 2011, FAA)	No comparable data available
Paved Road (Lane Miles)	0	8	595
Dirt Road (Lane Miles)	0	35	3,610
Gravel Road (Lane Miles)	0	173	4,391
Parking Lot (Count)	0	90	2,045
Paved Trails (Miles)	0	1	21
Unpaved Trails (Miles)	0	174	256
Boardwalks (Miles)	0	8	47
Trail Bridges (Count)	0	4	27
Culvert Bridges (Count)	0	2	52
Road Bridges (Count)	0	0	238
Floating Docks (Count)	0	2	37
Stationary Docks (Count)	0	2	68
Airstrips (Count)	0	3	4

Identified Transportation Planning Needs	CCP update; Traditional use determination
Existing Partnerships	Kachemak Bay Research Reserve, Friends of Alaskan National Wildlife Refuges, City of Homer, Coast Guard, RAP, Alaska Marine Ferry, numerous state, national and international science collaborations
Alternative Transportation Opportunities	None reported
Climate Change Threats	Storm frequency and intensity
Natural and Cultural Known Threats	Roads (runoff, invasive species, etc); public off-road vehicle use; and vandalism, looting, and trampling of archaeological sites
Natural and Cultural Possible Threats	Fuel barge spills, severe weather, invasive species

Distribution of Core Transportation Assets by API vs. FCI



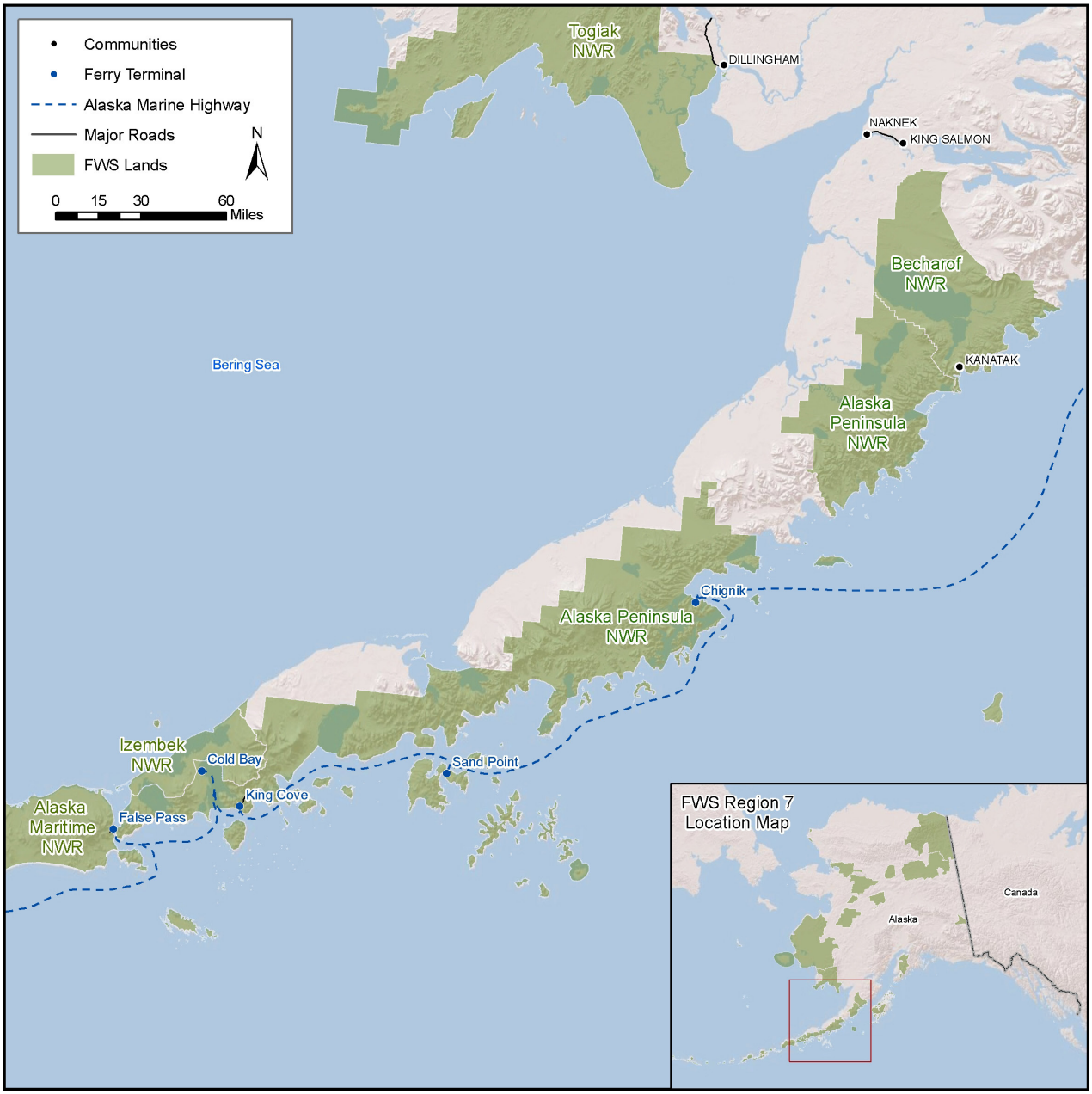
API: The asset priority index (API) ranks how critical assets are in accomplishing FWS mission and goals. Assets with an API closer to 100 are of higher priority whereas assets with ratings closer to 0 are of lower priority.

FCI: Facility condition index (FCI) is the ratio of deferred maintenance costs to replacement value. A larger FCI value indicates worse asset condition as there are higher costs to bring an asset back to full repair. A lower FCI value indicates better asset condition as less cost is required to bring an asset back to full repair.

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Alaska Peninsula/Becharof National Wildlife Refuge



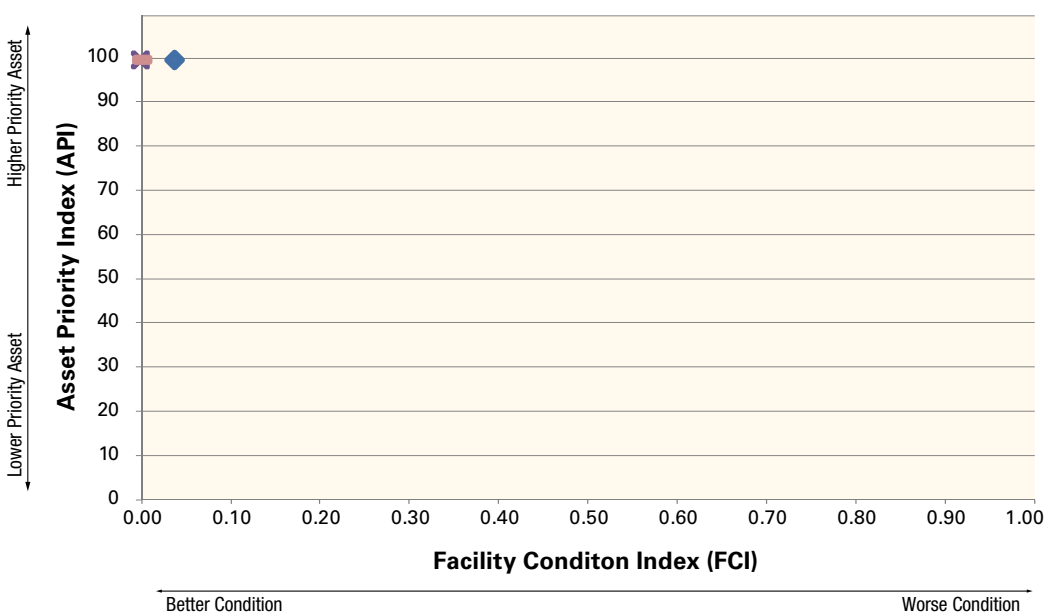
Access Methods and Locations	Alaska Marine Highway, boats from Shelikof Strait or Bristol Bay, aircraft from King Salmon
Nearby Federal Land Management Agencies	Alaska Maritime NWR, Izembek NWR, Aniakchak National Monument and Preserve, Katmai National Park and Preserve
Alaska DOT Region and Borough	ADOT&PF Central Region; Aleutians East Borough, Lake and Peninsula Borough
Gateway Communities	Chignik, Chignik Lagoon, Homer, King Salmon, and Naknek
Connections to State or National Trails	None
Scenic Byway	Alaska Marine Highway (State; National Scenic Byway)
Air Quality Non-Attainment Area	None

Last updated October 2011

	Alaska Peninsula Becharof NWR	Region 7 Total	All Other Regions Total
Acres	4,776,135	76,837,023	331,751,420
Traffic Counts	Not available	Not available	Not available
Visitation Count	9,438	1,407,698	43,074,701
Visitation Count Methodology	FWS Annual Performance Plan Workbook		
Safety - Reported Crashes	Vehicle - None reported (2003 to 2007, ADOT&PF) Airplane - 16 (1990 to 2011, FAA)	Vehicle - 1,811 (2003 to 2007, ADOT&PF) Airplane - 145 (1990 to 2011, FAA)	No comparable data available
Paved Road (Lane Miles)	0	8	595
Dirt Road (Lane Miles)	0	35	3,610
Gravel Road (Lane Miles)	3	173	4,391
Parking Lot (Count)	1	90	2,045
Paved Trails (Miles)	0	1	21
Unpaved Trails (Miles)	0	174	256
Boardwalks (Miles)	0	8	47
Trail Bridges (Count)	0	4	27
Culvert Bridges (Count)	0	2	52
Road Bridges (Count)	0	0	238
Floating Docks (Count)	0	2	37
Stationary Docks (Count)	0	2	68
Airstrips (Count)	1	3	4

Identified Transportation Planning Needs	Traditional use determination
Existing Partnerships	DOI, Coast Guard, NOAA, NPS, Alaska Department of Fish and Game, Togiak NWR, Izembek NWR
Alternative Transportation Opportunities	Fewer motorized vehicle trips by staff
Climate Change Threats	Storm frequency and intensity
Natural and Cultural Known Threats	Roads (runoff, invasive species, etc.); and vandalism, trampling, and looting of archaeological sites
Natural and Cultural Possible Threats	Fuel barge spills (including hazardous material), other vehicle fuel/hazmat spills, severe weather, invasive species

Distribution of Core Transportation Assets by API vs. FCI



Parking Lot
Roads (Gravel)
Airstrip

API: The asset priority index (API) ranks how critical assets are in accomplishing FWS mission and goals. Assets with an API closer to 100 are of higher priority whereas assets with ratings closer to 0 are of lower priority.

FCI: Facility condition index (FCI) is the ratio of deferred maintenance costs to replacement value. A larger FCI value indicates worse asset condition as there are higher costs to bring an asset back to full repair. A lower FCI value indicates better asset condition as less cost is required to bring an asset back to full repair.

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Arctic National Wildlife Refuge

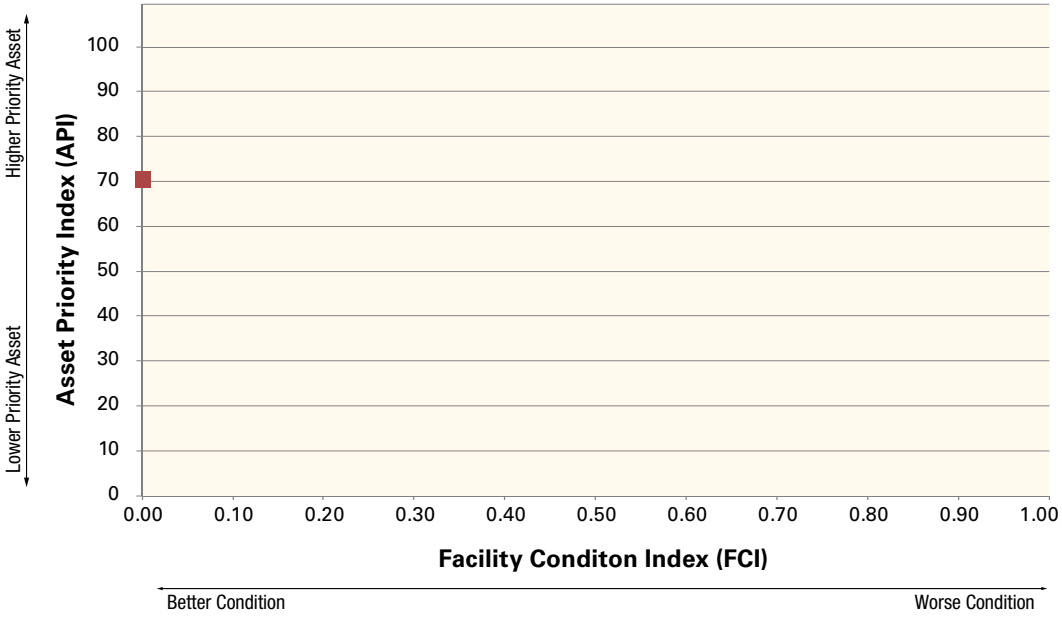
Access Methods and Locations	Arctic Village, Kaktovik, aircraft from Fairbanks
Nearby Federal Land Management Agencies	Trans-Alaska Pipeline Utility Corridor (BLM), Gates of the Arctic National Park and Preserve, Yukon Flats NWR, and Ivvavik and Vuntut National Parks (Canada)
Alaska DOT Region and Borough	ADOT&PF Northern Region; North Slope Borough
Gateway Communities	Arctic Village, Coldfoot, Fairbanks, Kaktovik, and Fort Yukon
Connections to State or National Trails	None
Scenic Byway	Dalton Highway (State)
Air Quality Non-Attainment Area	None

Last updated October 2011

	Arctic NWR	Region 7 Total	All Other Regions Total
Acres	19,286,722	76,837,023	331,751,420
Traffic Counts	Not available	Not available	Not available
Visitation Count	12,600	1,407,698	43,074,701
Visitation Count Methodology	FWS Annual Performance Plan Workbook		
Safety - Reported Crashes	Vehicle - none reported (2003 to 2007, ADOT&PF) Airplane - 13 (1990 to 2011, FAA)	Vehicle - 1,811 (2003 to 2007, ADOT&PF) Airplane - 145 (1990 to 2011, FAA)	No comparable data available
Paved Road (Lane Miles)	0	8	595
Dirt Road (Lane Miles)	0	35	3,610
Gravel Road (Lane Miles)	0	173	4,391
Parking Lot (Count)	0	90	2,045
Paved Trails (Miles)	0	1	21
Unpaved Trails (Miles)	0	174	256
Boardwalks (Miles)	0	8	47
Trail Bridges (Count)	0	4	27
Culvert Bridges (Count)	0	2	52
Road Bridges (Count)	0	0	238
Floating Docks (Count)	0	2	37
Stationary Docks (Count)	0	2	68
Airstrips (Count)	1	3	4

Identified Transportation Planning Needs	None reported
Existing Partnerships	North Slope Borough, Dalton Highway Working Group, Game Commercial Service Board, Air Force, local university
Alternative Transportation Opportunities	More fuel efficient fleet, trail connections
Climate Change Threats	Flooding, storm frequency and intensity, sea and lake level change
Natural and Cultural Known Threats	Flooding; roads (runoff, invasive species, etc); wildlife; coastal erosion; and vandalism, looting, and trampling of archaeological sites
Natural and Cultural Possible Threats	On-site fuel storage, fuel barge spills (including hazardous material), invasive species

Distribution of Core Transportation Assets by API vs. FCI



Airstrip

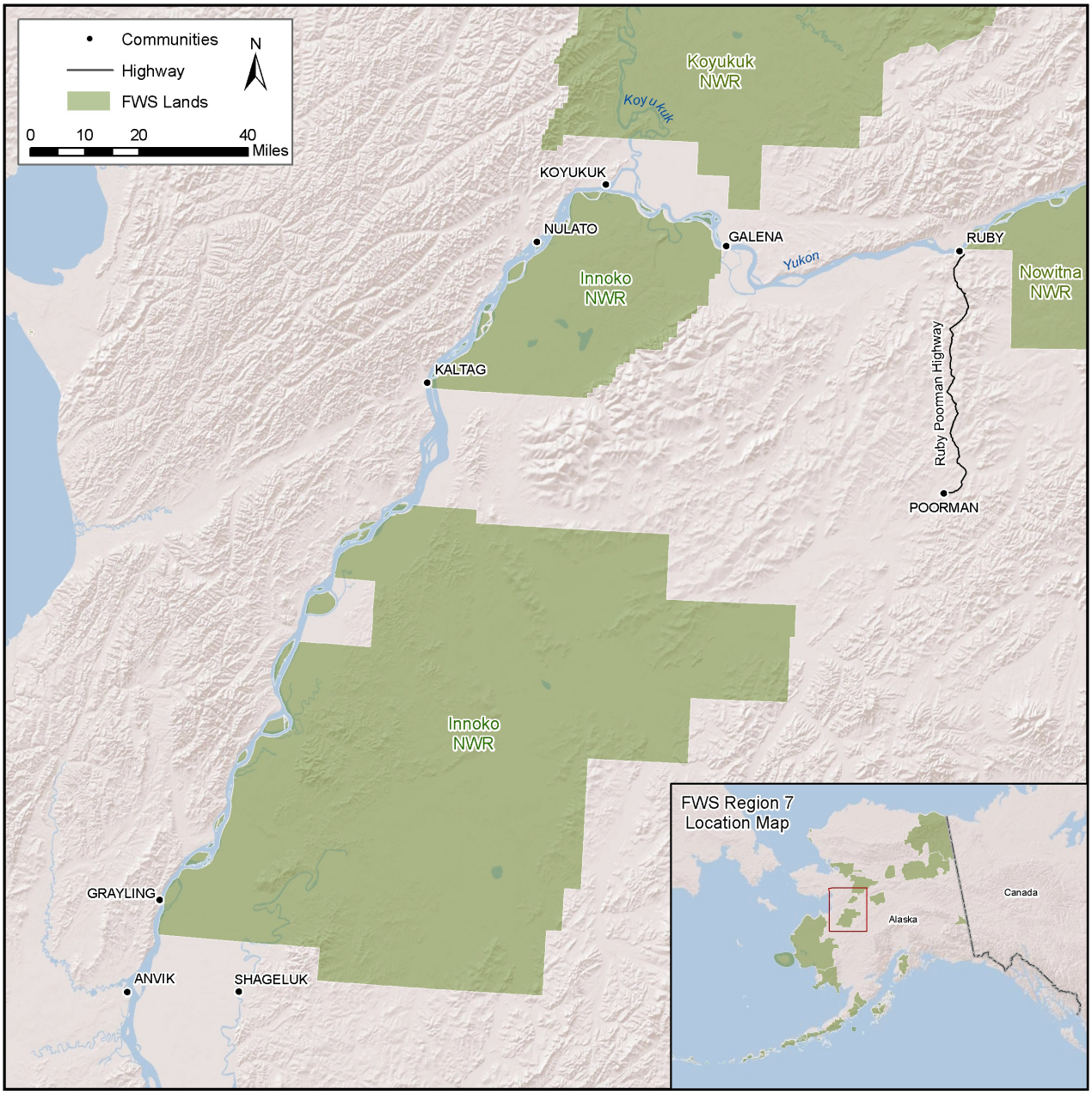
API: The asset priority index (API) ranks how critical assets are in accomplishing FWS mission and goals. Assets with an API closer to 100 are of higher priority whereas assets with ratings closer to 0 are of lower priority.

FCI: Facility condition index (FCI) is the ratio of deferred maintenance costs to replacement value. A larger FCI value indicates worse asset condition as there are higher costs to bring an asset back to full repair. A lower FCI value indicates better asset condition as less cost is required to bring an asset back to full repair.

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Innoko National Wildlife Refuge



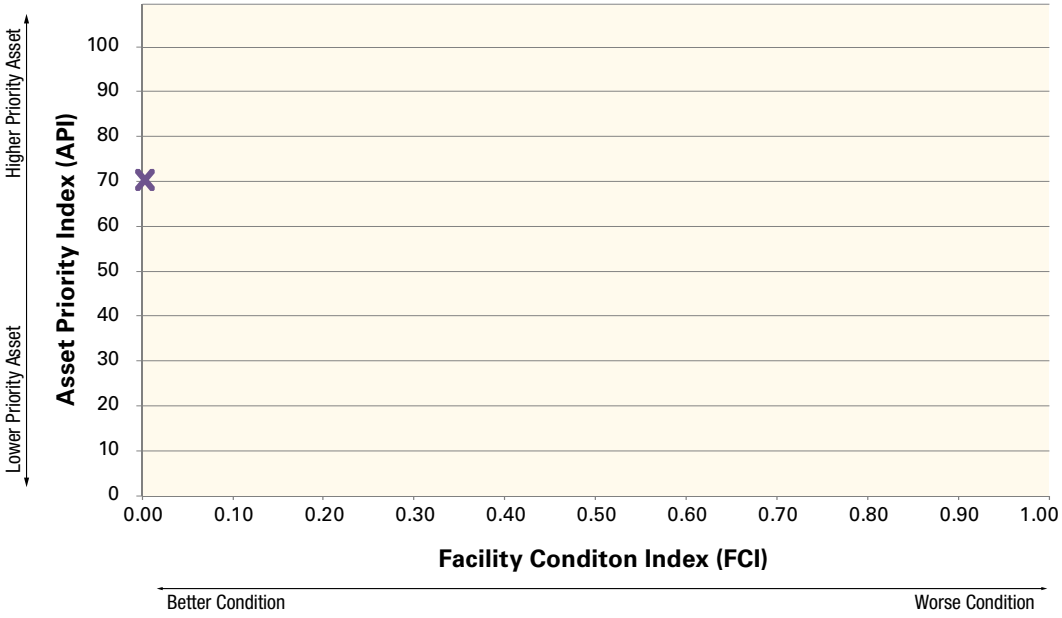
Access Methods and Locations	Galena, Grayling, Kaltag, Koyukuk, Nulato, Yukon River
Nearby Federal Land Management Agencies	Koyukuk NWR, Nowitna NWR, Yukon Delta NWR, BLM lands
Alaska DOT Region and Borough	ADOT&PF Northern Region and Central Region; Yukon-Koyukuk Borough
Gateway Communities	Anvik, Fairbanks, Galena, Grayling, Holy Cross (Northern Unit), Hughes, Huslia, Kaltag, Kotzebue, Koyukuk, McGrath, Nome, Nulato, Poorman, Ruby, Shageluk, Tanana, and Willow
Connections to State or National Trails	Kaltag Portage Trail
Scenic Byway	None
Air Quality Non-Attainment Area	None

Last updated October 2011

	Innoko NWR	Region 7 Total	All Other Regions Total
Acres	3,850,481	76,837,023	331,751,420
Traffic Counts	Not available	Not available	Not available
Visitation Count	1,400	1,407,698	43,074,701
Visitation Count Methodology	FWS Annual Performance Plan Workbook		
Safety - Reported Crashes	Vehicle - None reported (2003 to 2007, ADOT&PF) Airplane - 1 (1990 to 2011, FAA)	Vehicle - 1,811 (2003 to 2007, ADOT&PF) Airplane - 145 (1990 to 2011, FAA)	No comparable data available
Paved Road (Lane Miles)	0	8	595
Dirt Road (Lane Miles)	0	35	3,610
Gravel Road (Lane Miles)	0	173	4,391
Parking Lot (Count)	1	90	2,045
Paved Trails (Miles)	0	1	21
Unpaved Trails (Miles)	0	174	256
Boardwalks (Miles)	0	8	47
Trail Bridges (Count)	0	4	27
Culvert Bridges (Count)	0	2	52
Road Bridges (Count)	0	0	238
Floating Docks (Count)	0	2	37
Stationary Docks (Count)	0	2	68
Airstrips (Count)	0	3	4

Identified Transportation Planning Needs	None reported
Existing Partnerships	None reported
Alternative Transportation Opportunities	None reported
Climate Change Threats	Storm frequency and intensity
Natural and Cultural Known Threats	Flooding; and vandalism, looting, and trampling of archaeological sites
Natural and Cultural Possible Threats	On-site fuel storage, fuel barge spills (including hazardous material)

Distribution of Core Transportation Assets by API vs. FCI



Parking Lot

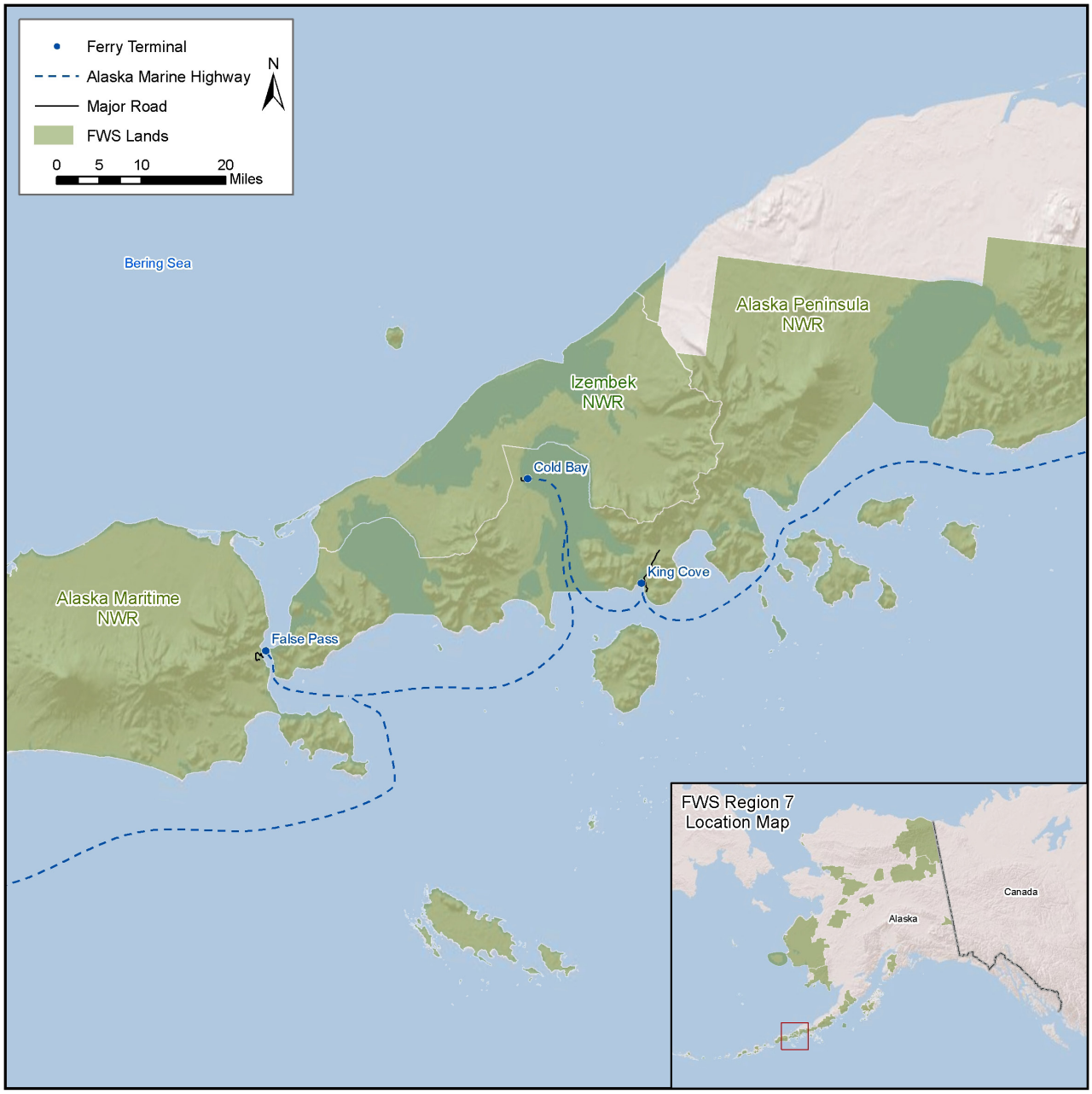
API: The asset priority index (API) ranks how critical assets are in accomplishing FWS mission and goals. Assets with an API closer to 100 are of higher priority whereas assets with ratings closer to 0 are of lower priority.

FCI: Facility condition index (FCI) is the ratio of deferred maintenance costs to replacement value. A larger FCI value indicates worse asset condition as there are higher costs to bring an asset back to full repair. A lower FCI value indicates better asset condition as less cost is required to bring an asset back to full repair.

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Izembek National Wildlife Refuge



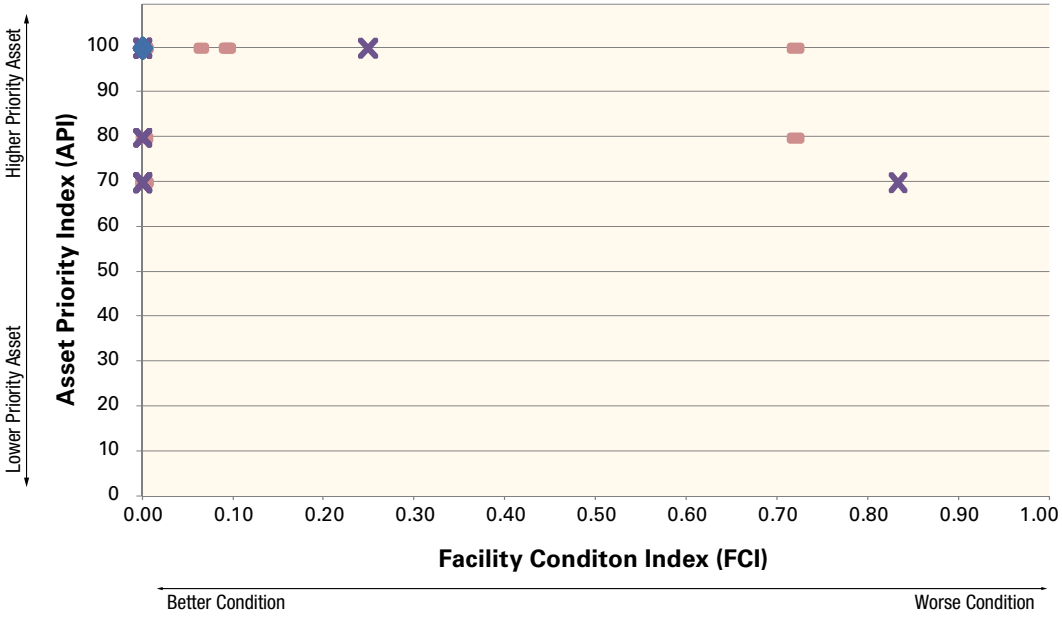
Access Methods and Locations	Cold Bay and King Cove via ferry, air, road via Cold Bay
Nearby Federal Land Management Agencies	Alaska Maritime NWR, Alaska Peninsula NWR
Alaska DOT Region and Borough	ADOT&PF Central Region; Aleutians East Borough
Gateway Communities	Anchorage, Cold Bay, and King Cove
Connections to State or National Trails	None
Scenic Byway	Alaska Marine Highway (State / National Scenic Byway)
Air Quality Non-Attainment Area	None

Last updated October 2011

	Izembek NWR	Region 7 Total	All Other Regions Total
Acres	311,088	76,837,023	331,751,420
Traffic Counts	Not available	Not available	Not available
Visitation Count	7,600	1,407,698	43,074,701
Visitation Count Methodology	FWS Annual Performance Plan Workbook		
Safety - Reported Crashes	Vehicle - None reported (2003 to 2007, ADOT&PF) Airplane - 1 (1990 to 2011, FAA)	Vehicle - 1,811 (2003 to 2007, ADOT&PF) Airplane - 145 (1990 to 2011, FAA)	No comparable data available
Paved Road (Lane Miles)	0	8	595
Dirt Road (Lane Miles)	8	35	3,610
Gravel Road (Lane Miles)	63	173	4,391
Parking Lot (Count)	17	90	2,045
Paved Trails (Miles)	0	1	21
Unpaved Trails (Miles)	0	174	256
Boardwalks (Miles)	0	8	47
Trail Bridges (Count)	0	4	27
Culvert Bridges (Count)	0	2	52
Road Bridges (Count)	4	0	238
Floating Docks (Count)	0	2	37
Stationary Docks (Count)	0	2	68
Airstrips (Count)	0	3	4

Identified Transportation Planning Needs	CCP Update; Izembek Land Exchange and Road Corridor EIS; Traditional use determination
Existing Partnerships	Alaska Fish and Game, USGS, FWS, Coast Guard, Aleutians East Borough
Alternative Transportation Opportunities	Trails, biking, kayaks
Climate Change Threats	Flooding, storm frequency and intensity, freeze and thaw cycles
Natural and Cultural Known Threats	Flooding; off-road vehicles (public use); and vandalism, looting, and trampling of archaeological sites
Natural and Cultural Possible Threats	None reported

Distribution of Core Transportation Assets by API vs. FCI



Parking Lot
Roads (Gravel)
Roads (Bridges)

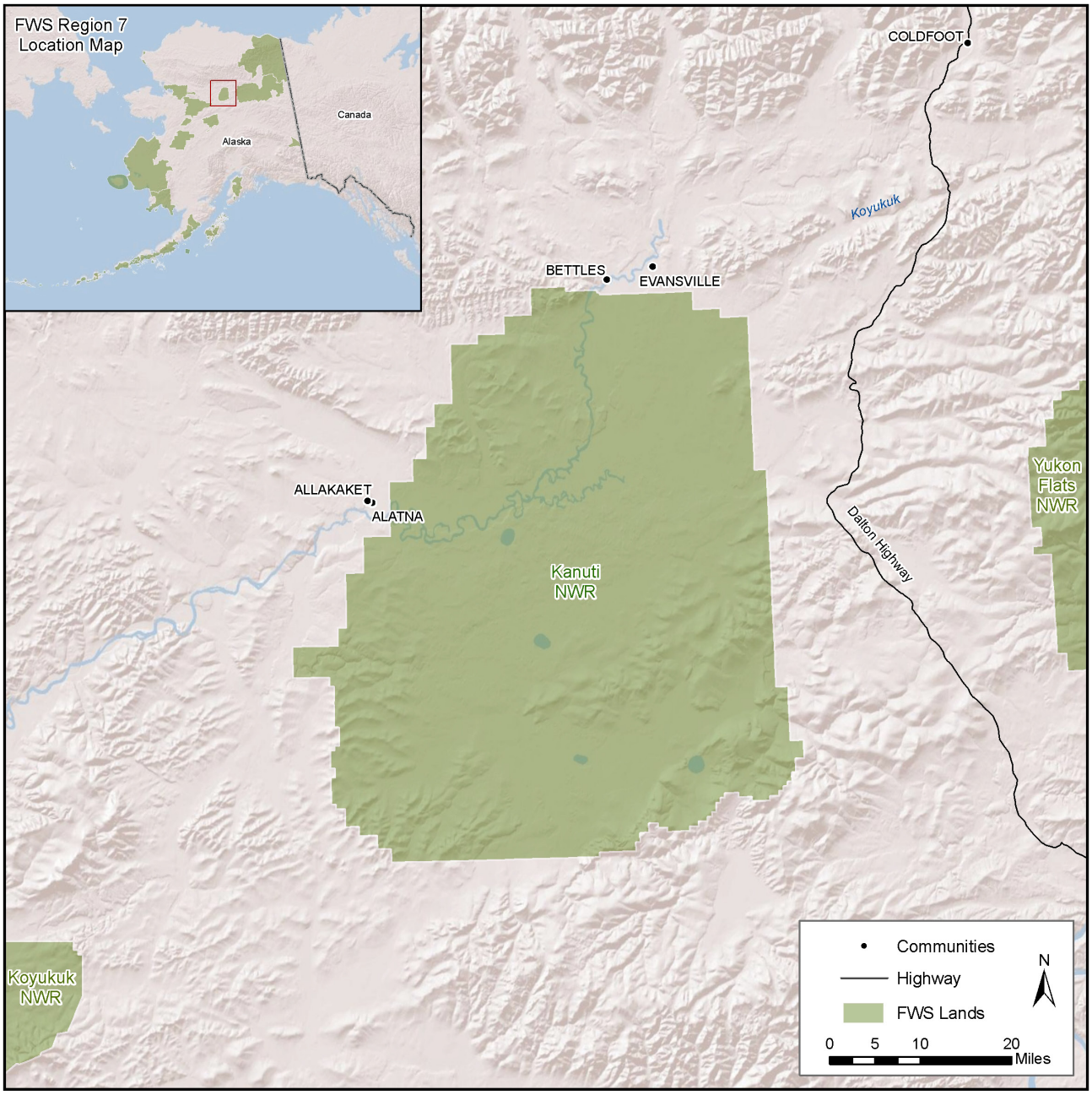
API: The asset priority index (API) ranks how critical assets are in accomplishing FWS mission and goals. Assets with an API closer to 100 are of higher priority whereas assets with ratings closer to 0 are of lower priority.

FCI: Facility condition index (FCI) is the ratio of deferred maintenance costs to replacement value. A larger FCI value indicates worse asset condition as there are higher costs to bring an asset back to full repair. A lower FCI value indicates better asset condition as less cost is required to bring an asset back to full repair.

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Kanuti National Wildlife Refuge



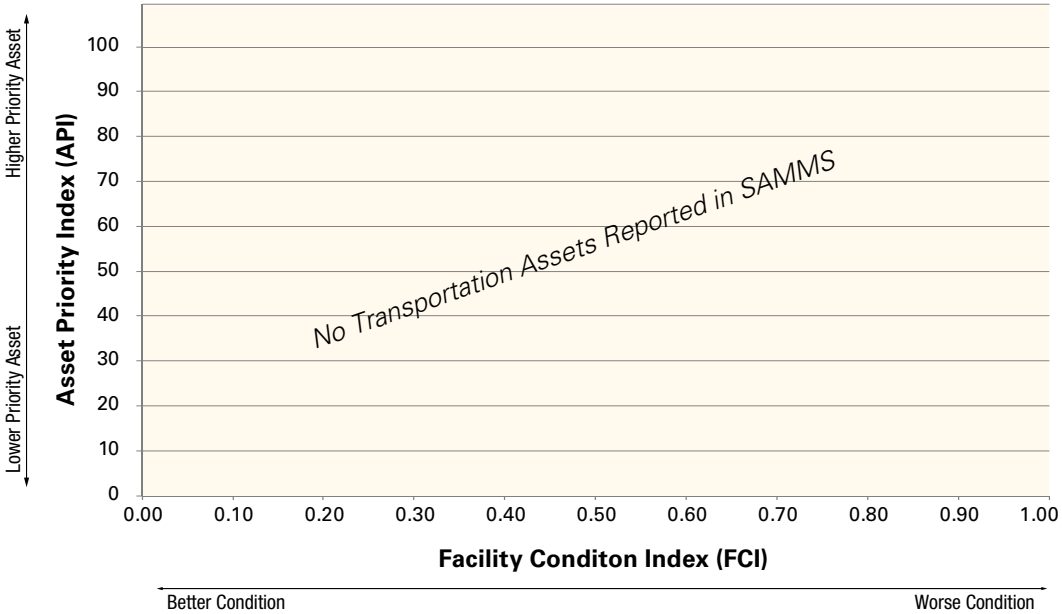
Access Methods and Locations	Bettles, Koyukuk River, Fairbanks, Alatna, Allakaket, and Bettles ice road
Nearby Federal Land Management Agencies	Gates of the Arctic National Park and Preserve, BLM lands
Alaska DOT Region and Borough	ADOT&PF Northern Region;Yukon-Koyukuk Borough
Gateway Communities	Alatna, Allakaket, Bettles, Coldfoot, Evansville
Connections to State or National Trails	None
Scenic Byway	Dalton Highway (State)
Air Quality Non-Attainment Area	None

Last updated October 2011

	Kanuti NWR	Region 7 Total	All Other Regions Total
Acres	1,430,160	76,837,023	1331,751,420
Traffic Counts	Not available	Not available	Not available
Visitation Count	4,283	1,407,698	43,074,701
Visitation Count Methodology	FWS Annual Performance Plan Workbook		
Safety - Reported Crashes	Vehicle - None reported (2003 to 2007, ADOT&PF) Airplane - None reported (1990 to 2011, FAA)	Vehicle - 1,811 (2003 to 2007, ADOT&PF) Airplane - 145 (1990 to 2011, FAA)	No comparable data available
Paved Road (Lane Miles)	0	8	595
Dirt Road (Lane Miles)	0	35	3,610
Gravel Road (Lane Miles)	0	173	4,391
Parking Lot (Count)	0	90	2,045
Paved Trails (Miles)	0	1	21
Unpaved Trails (Miles)	0	174	256
Boardwalks (Miles)	0	8	47
Trail Bridges (Count)	0	4	27
Culvert Bridges (Count)	0	2	52
Road Bridges (Count)	0	0	238
Floating Docks (Count)	0	2	37
Stationary Docks (Count)	0	2	68
Airstrips (Count)	0	3	4

Identified Transportation Planning Needs	Traditional use determination
Existing Partnerships	City of Bettles, Evansville Tribe, NPS, Friends of Alaska
Alternative Transportation Opportunities	Trails
Climate Change Threats	Flooding; freeze and thaw cycles, sea and lake level change
Natural and Cultural Known Threats	Flooding; roads (runoff, invasive species, etc); off-road vehicle (ORV); wildlife; and vandalism, looting, and trampling of archaeological sites
Natural and Cultural Possible Threats	On-site fuel storage, invasive species

Distribution of Core Transportation Assets by API vs. FCI



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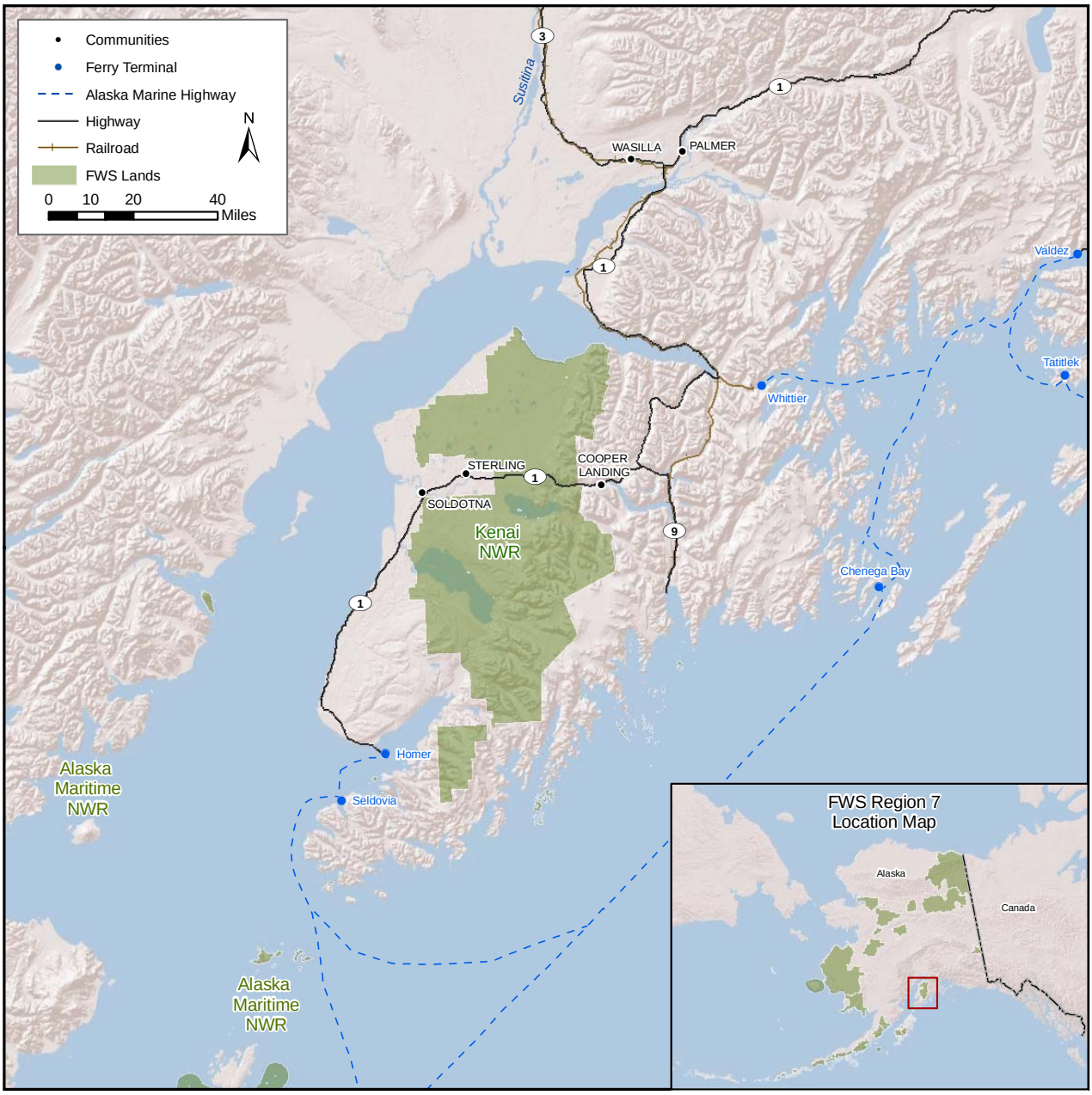
U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Kenai National Wildlife Refuge



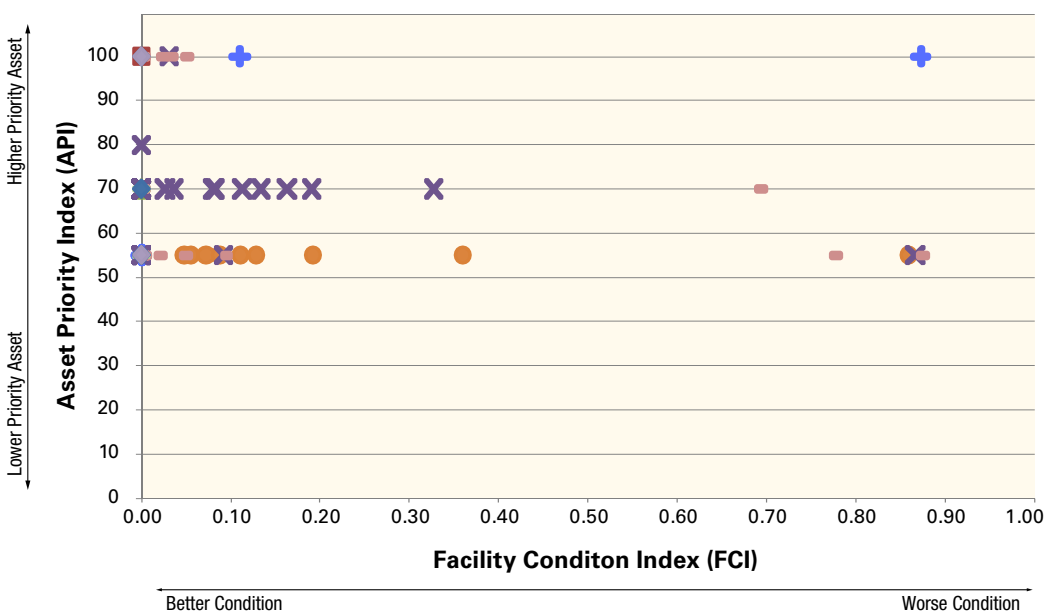
Access Methods and Locations	Sterling Highway, Swan Lake Road, Kenai River, Moose River, Swanson River, aircraft
Nearby Federal Land Management Agencies	Chugach National Forest, Kenai Fjords National Park
Alaska DOT Region and Borough	ADOT&PF Central Region; Kenai Peninsula Borough
Gateway Communities	Anchorage, Cooper Landing, Kenai, Homer, Ninilchik, Seldovia, Seward, Sterling
Connections to State or National Trails	None
Scenic Byway	Sterling Highway (State)
Air Quality Non-Attainment Area	None

Last updated October 2011

	Kenai NWR	Region 7 Total	All Other Regions Total
Acres	1,912,425	76,837,023	330,751,420
Traffic Counts	Not available	Not available	Not available
Visitation Count	1,074,379	1,407,698	43,074,701
Visitation Count Methodology	FWS Annual Performance Plan Workbook		
Safety - Reported Crashes	Vehicle - 1,648 (2003 to 2007, ADOT&PF) Airplane - 10 (1990 to 2011, FAA)	Vehicle - 1,811 (2003 to 2007, ADOT&PF) Airplane - 145 (1990 to 2011, FAA)	No comparable data available
Paved Road (Lane Miles)	7	8	595
Dirt Road (Lane Miles)	27	35	3,610
Gravel Road (Lane Miles)	102	173	4,391
Parking Lot (Count)	65	90	2,045
Paved Trails (Miles)	1	1	21
Unpaved Trails (Miles)	144	174	256
Boardwalks (Miles)	5	8	47
Trail Bridges (Count)	2	4	27
Culvert Bridges (Count)	0	2	52
Road Bridges (Count)	0	0	238
Floating Docks (Count)	2	2	37
Stationary Docks (Count)	1	2	68
Airstrips (Count)	0	3	4

Identified Transportation Planning Needs	Road safety audit (RSA); Issue driven plan regarding parking; Traditional use determination
Existing Partnerships	ADOT&PF, Chugach National Forest, Kenai Watershed Forum, Kenai River Special Management Area, State Troopers
Alternative Transportation Opportunities	Trail connections
Climate Change Threats	Flooding
Natural and Cultural Known Threats	Flooding; wildlife; animal/vehicle collisions; coastal erosion; and vandalism, looting, trampling of archaeological sites
Natural and Cultural Possible Threats	Fuel spills, invasive species, vandalism, looting, trampling of archaeological sites

Distribution of Core Transportation Assets by API vs. FCI



Docks (Stationary)
Docks (Floating)
Roads (Gravel)
Roads (Dirt)
Roads (Paved)
Parking Lot
Trails (Paved)
Trails (Unpaved)
Trail Bridges
Boardwalks

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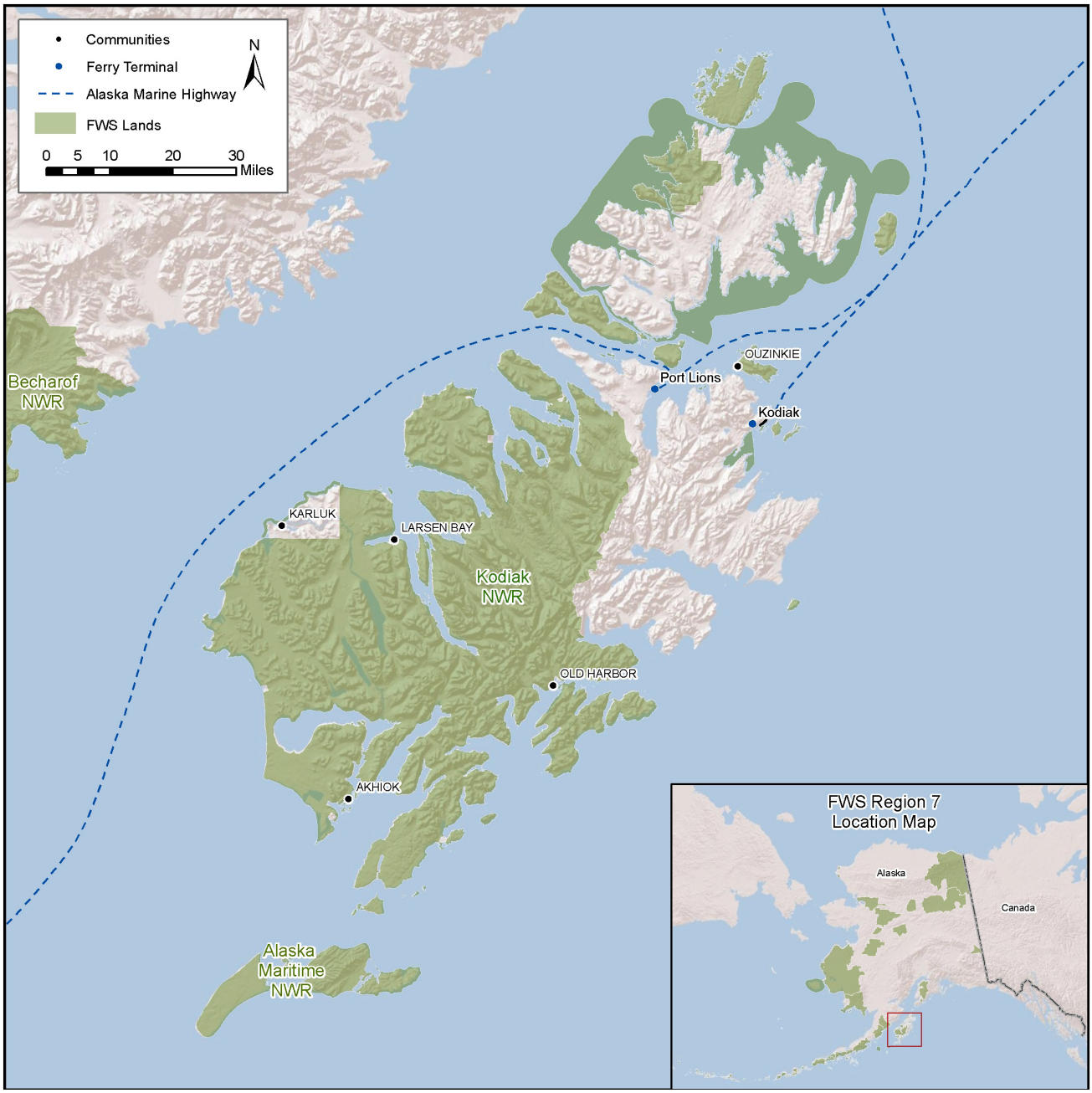
U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Kodiak National Wildlife Refuge



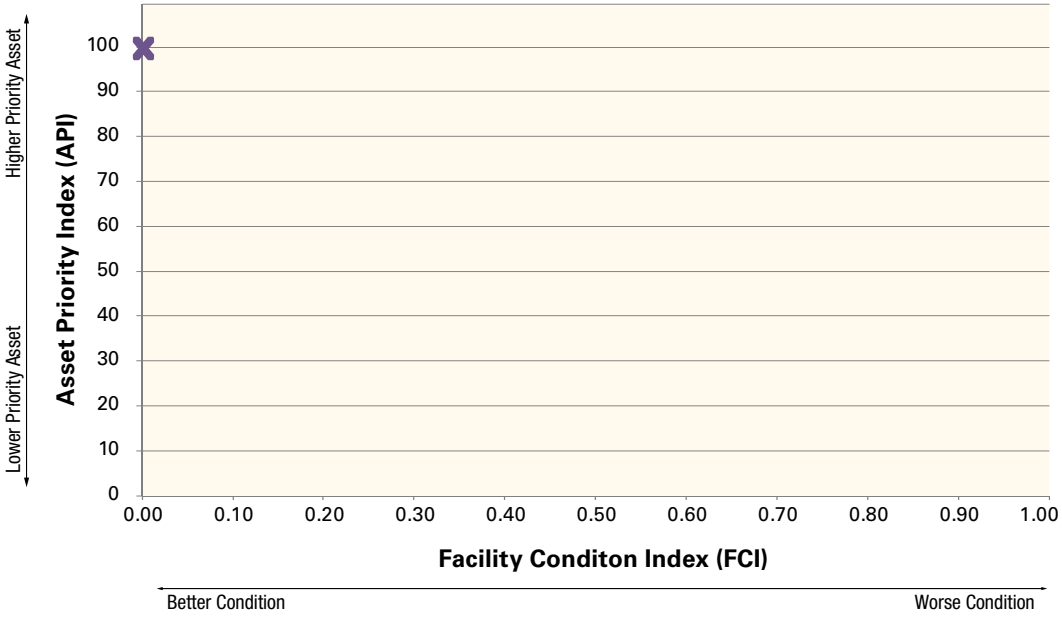
Access Methods and Locations	Akhiok, Karluk, Larsen Bay, Old Harbor, aircraft, ferry through Kodiak, boats from nearby towns
Nearby Federal Land Management Agencies	Alaska Maritime NWR, Becharof NWR, BLM lands
Alaska DOT Region and Borough	ADOT&PF Central Region; Kodiak Island Borough
Gateway Communities	Akhiok, Karluk, Kodiak, Larsen Bay, Old Harbor, Ouzinkie, and Port Lions
Connections to State or National Trails	None
Scenic Byway	Alaska Marine Highway (State / National Scenic Byway)
Air Quality Non-Attainment Area	None

Last updated October 2011

	Kodiak NWR	Region 7 Total	All Other Regions Total
Acres	1,990,418	76,837,023	331,751,420
Traffic Counts	Not available	Not available	Not available
Visitation Count	48,951	1,407,698	43,074,701
Visitation Count Methodology	FWS Annual Performance Plan Workbook		
Safety - Reported Crashes	Vehicle - None reported (2003 to 2007, ADOT&PF) Airplane - 5 (1990 to 2011, FAA)	Vehicle - 1,811 (2003 to 2007, ADOT&PF) Airplane - 145 (1990 to 2011, FAA)	No comparable data available
Paved Road (Lane Miles)	0	8	595
Dirt Road (Lane Miles)	0	35	3,610
Gravel Road (Lane Miles)	0	173	4,391
Parking Lot (Count)	1	90	2,045
Paved Trails (Miles)	0	1	21
Unpaved Trails (Miles)	0	174	256
Boardwalks (Miles)	0	8	47
Trail Bridges (Count)	0	4	27
Culvert Bridges (Count)	0	2	52
Road Bridges (Count)	0	0	238
Floating Docks (Count)	0	2	37
Stationary Docks (Count)	0	2	68
Airstrips (Count)	0	3	4

Identified Transportation Planning Needs	Traditional use determination
Existing Partnerships	Coast Guard, Kodiak Electric (Terror Lake Road)
Alternative Transportation Opportunities	More fuel efficient fleet
Climate Change Threats	Flooding, storm frequency and intensity, invasive species
Natural and Cultural Known Threats	Flooding; roads (runoff, invasive species, etc); hazardous materials spills; human-caused fires; and vandalism, looting, and trampling of archaeological sites
Natural and Cultural Possible Threats	Fuel barge spills (including hazardous material), other vehicle fuel and hazardous material spills, severe weather, invasive species, human-caused fires, ocean acidification

Distribution of Core Transportation Assets by API vs. FCI



Parking Lot

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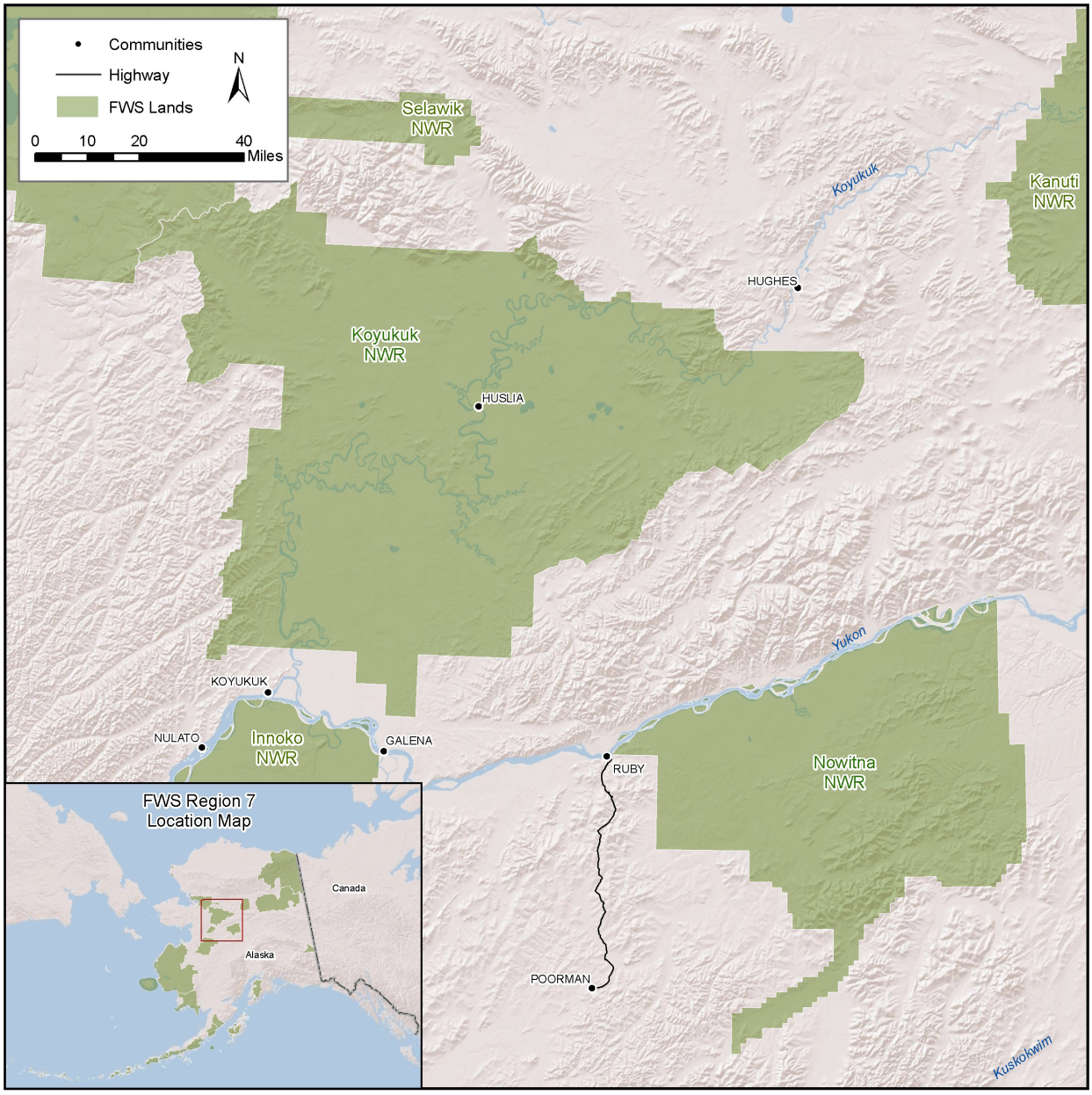
National Wildlife Refuge Fact Sheet

Koyukuk/Nowitna National Wildlife Refuge



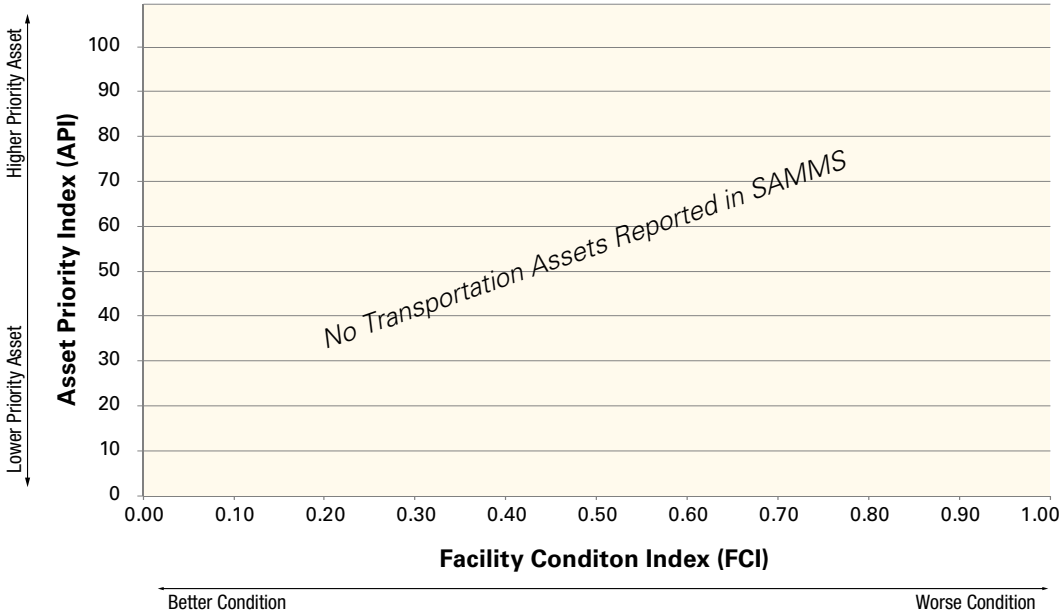
Access Methods and Locations	Air access from local villages, Anchorage, Fairbanks, Galena, Kotzebue, boat access on the Yukon and Koyukuk rivers as well as Ruby, Tanana, Nulato, Kaltag, Yuko, and Hughes
Nearby Federal Land Management Agencies	Selawik NWR, Innoko NWR, BLM lands
Alaska DOT Region and Borough	ADOT&PF Northern Region; Northwest Arctic Borough, Yukon-Koyukuk Borough
Gateway Communities	Tanana, Ruby, Galena, Koyukuk, Nulato, Kaltag, Huslia, Hughes
Connections to State or National Trails	None
Scenic Byway	None
Air Quality Non-Attainment Area	None

Last updated October 2011

	Koyukuk and Nowitna NWR	Region 7 Total	All Other Regions Total
Acres	5,110,161	76,837,023	331,751,420
Traffic Counts	Not available	Not available	Not available
Visitation Count	4,000	1,407,698	43,074,701
Visitation Count Methodology	FWS Annual Performance Plan Workbook		
Safety - Reported Crashes	Vehicle - None reported (2003 to 2007, ADOT&PF) Airplane - 2 (1990 to 2011, FAA)	Vehicle - 1,811 (2003 to 2007, ADOT&PF) Airplane - 145 (1990 to 2011, FAA)	No comparable data available
Paved Road (Lane Miles)	0	8	595
Dirt Road (Lane Miles)	0	35	3,610
Gravel Road (Lane Miles)	0	173	4,391
Parking Lot (Count)	0	90	2,045
Paved Trails (Miles)	0	1	21
Unpaved Trails (Miles)	0	174	256
Boardwalks (Miles)	0	8	47
Trail Bridges (Count)	0	4	27
Culvert Bridges (Count)	0	2	52
Road Bridges (Count)	0	0	238
Floating Docks (Count)	0	2	37
Stationary Docks (Count)	0	2	68
Airstrips (Count)	0	3	4

Identified Transportation Planning Needs	Traditional use determination
Existing Partnerships	BLM, Louden Tribe Youth Program, Friends Group
Alternative Transportation Opportunities	None reported
Climate Change Threats	Flooding
Natural and Cultural Known Threats	Flooding; roads (runoff, invasive species, etc.); public off-road vehicle (ORV) use; and vandalism, looting, and trampling of archaeological sites
Natural and Cultural Possible Threats	Fuel barge spills (including hazardous material), invasive species

Distribution of Core Transportation Assets by API vs. FCI



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U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Selawik National Wildlife Refuge

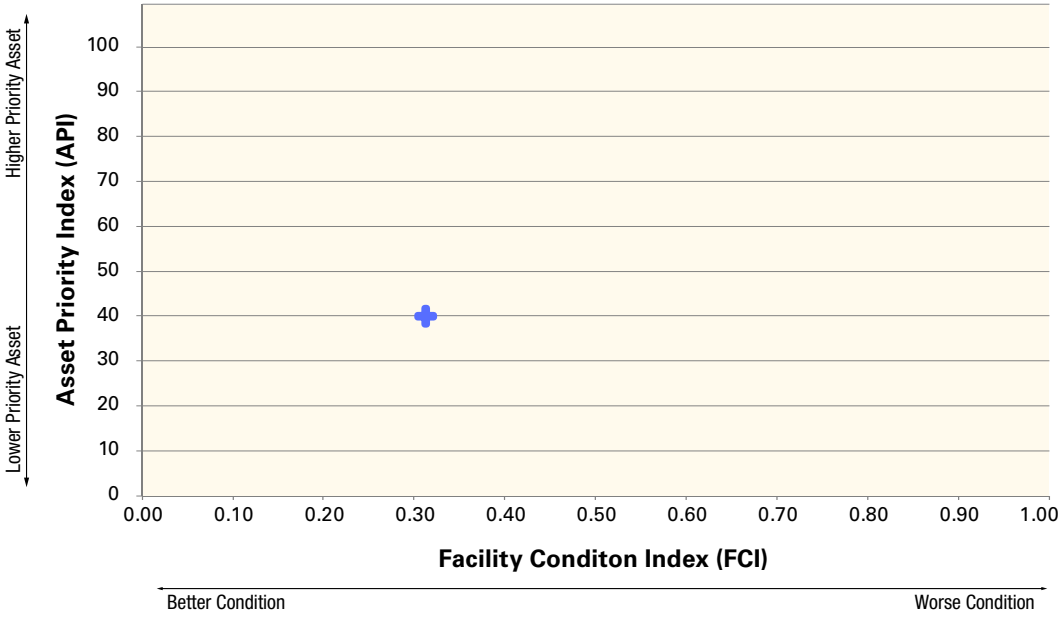
Access Methods and Locations	Selawik, Noorvik, Kiana, aircraft from Kotzebue, boat access on the Kobuk River, Hotham Inlet, and Selawik Lake
Nearby Federal Land Management Agencies	Koyukuk NWR, BLM lands, Kobuk Valley National Park, Noatak National Preserve
Alaska DOT Region and Borough	ADO&PF Northern Region; Northwest Arctic Borough
Gateway Communities	Ambler, Buckland, Kiana, Kobuk, Kotzebue, Noorvik, Selawik, Shungnak
Connections to State or National Trails	None
Scenic Byway	None
Air Quality Non-Attainment Area	None

Last updated October 2011

	Selawik NWR	Region 7 Total	All Other Regions Total
Acres	2,150,162	76,837,023	331,751,420
Traffic Counts	Not available	Not available	Not available
Visitation Count	4,342	1,407,698	43,074,701
Visitation Count Methodology	FWS Annual Performance Plan Workbook		
Safety - Reported Crashes	Vehicle - None reported (2003 to 2007, ADOT&PF) Airplane - 1 (1990 to 2011, FAA)	Vehicle - 1,811 (2003 to 2007, ADOT&PF) Airplane - 145 (1990 to 2011, FAA)	No comparable data available
Paved Road (Lane Miles)	0	8	595
Dirt Road (Lane Miles)	0	35	3,610
Gravel Road (Lane Miles)	0	173	4,391
Parking Lot (Count)	0	90	2,045
Paved Trails (Miles)	0	1	21
Unpaved Trails (Miles)	0	174	256
Boardwalks (Miles)	1	8	47
Trail Bridges (Count)	1	4	27
Culvert Bridges (Count)	0	2	52
Road Bridges (Count)	0	0	238
Floating Docks (Count)	0	2	37
Stationary Docks (Count)	0	2	68
Airstrips (Count)	0	3	4

Identified Transportation Planning Needs	Traditional use determination
Existing Partnerships	BLM, NPS, Northwest Arctic Borough (NWAB) , ADF&G, Native Village of Selawik
Alternative Transportation Opportunities	More fuel efficient fleet, bikes
Climate Change Threats	Sea and lake level change
Natural and Cultural Known Threats	Vandalism, looting, and trampling of archaeological sites
Natural and Cultural Possible Threats	None reported

Distribution of Core Transportation Assets by API vs. FCI



Boardwalks

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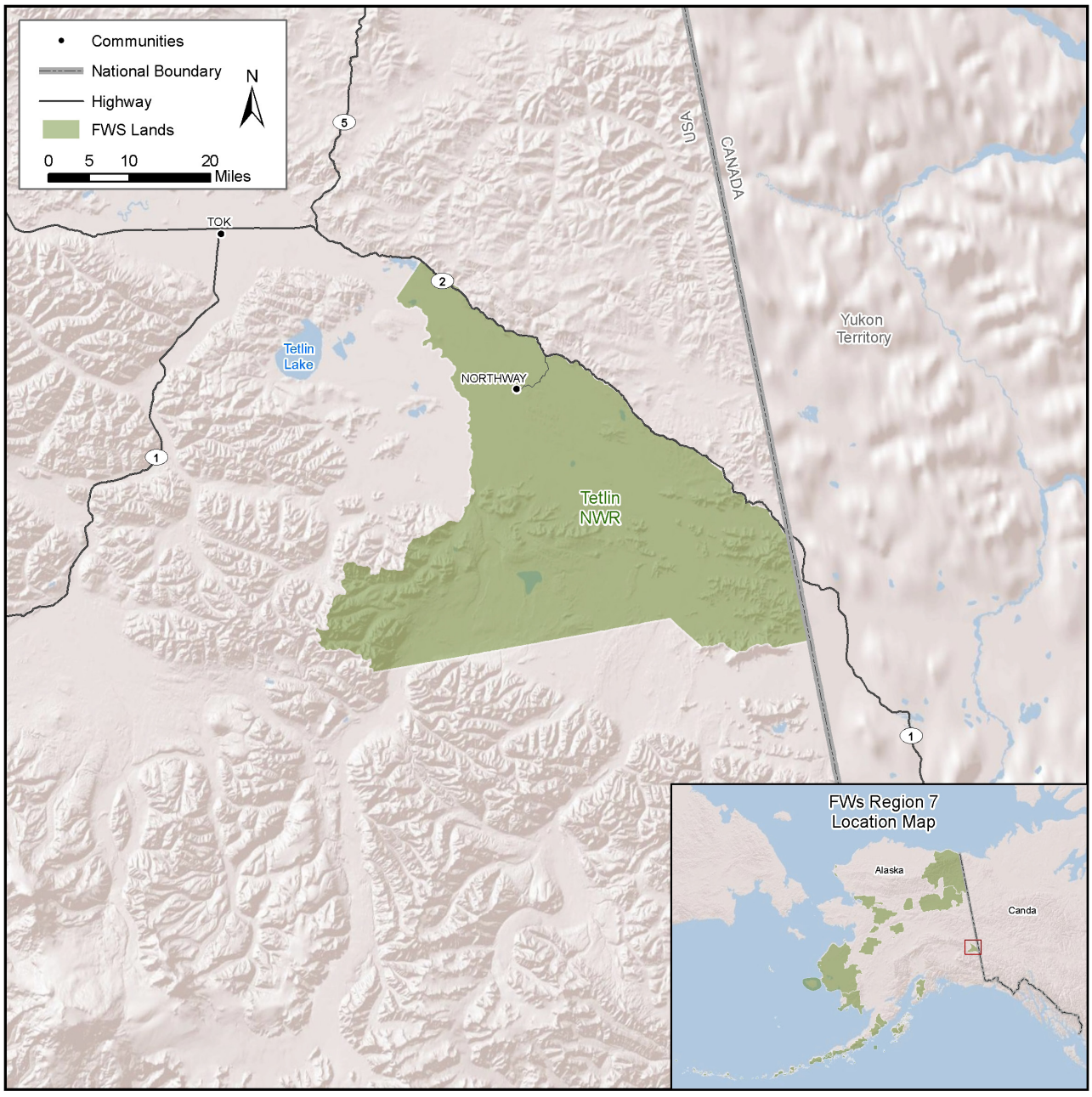
U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Tetlin National Wildlife Refuge



Access Methods and Locations	Alaska Highway 2, Northway, aircraft
Nearby Federal Land Management Agencies	BLM lands, Wrangell-St. Elias Preserve and Wilderness
Alaska DOT Region and Borough	ADOT&PF Northern Region; Southeast Fairbanks Borough
Gateway Communities	Northway, Tok, Tetlin
Connections to State or National Trails	None
Scenic Byway	None
Air Quality Non-Attainment Area	None

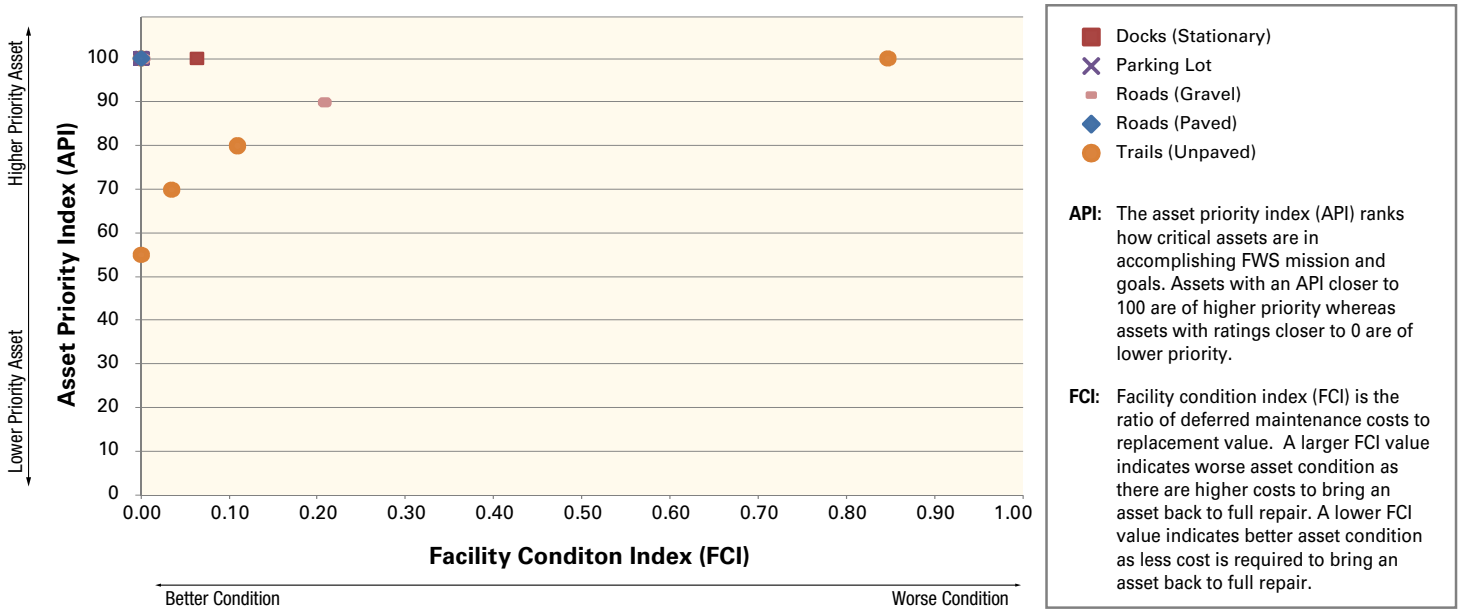
Last updated October 2011

	Tetlin NWR	Region 7 Total	All Other Regions Total
Acres	700,059	76,837,023	331,751,420
Traffic Counts	Not available	Not available	Not available
Visitation Count	38,168	1,407,698	43,074,701
Visitation Count Methodology	FWS Annual Performance Plan Workbook		
Safety - Reported Crashes	Vehicle - 163 (2003 to 2007, ADOT&PF) Airplane - 3 (1990 to 2011, FAA)	Vehicle - 1,811 (2003 to 2007, ADOT&PF) Airplane - 145 (1990 to 2011, FAA)	No comparable data available
Paved Road (Lane Miles)	1	8	595
Dirt Road (Lane Miles)	0	35	3,610
Gravel Road (Lane Miles)	6	173	4,391
Parking Lot (Count)	4*	90	2,045
Paved Trails (Miles)	0	1	21
Unpaved Trails (Miles)	26	174	256
Boardwalks (Miles)	0	8	47
Trail Bridges (Count)	0	4	27
Culvert Bridges (Count)	0	2	52
Road Bridges (Count)	0	0	238
Floating Docks (Count)	2	2	37
Stationary Docks (Count)	0	2	68
Airstrips (Count)	0	3	4

Identified Transportation Planning Needs	Road safety audit (RSA); Traditional use determination
Existing Partnerships	Department of Community and Economic Development, ADOT&PF, Native Corporations and Tribal Councils, Alaska Public Lands Information Center
Alternative Transportation Opportunities	Trail connections
Climate Change Threats	Flooding, freeze and thaw cycles on permafrost
Natural and Cultural Known Threats	Flooding; roads (run off, invasive species); off-road vehicles; wildfire; wildlife; and vandalism, looting, and trampling of archaeological sites
Natural and Cultural Possible Threats	Other vehicle fuel and hazardous material spill, invasive species

**Numbers updated based on Refuge input.*

Distribution of Core Transportation Assets by API vs. FCI



U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Togiak National Wildlife Refuge

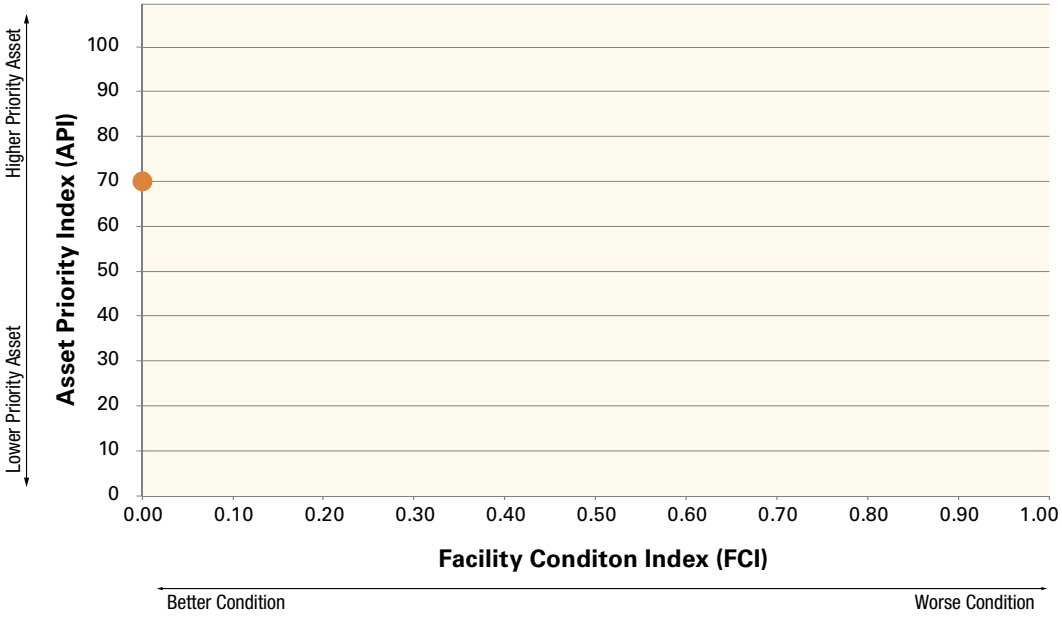
Access Methods and Locations	Goodnews Bay, Quinhagak, Bethel, Dillingham, Togiak, aircraft, boat from Bristol Bay and Bering Sea
Nearby Federal Land Management Agencies	Yukon Delta NWR, BLM lands
Alaska DOT Region and Borough	ADOT&PF Central Region
Gateway Communities	Bethel, Dillingham
Connections to State or National Trails	None
Scenic Byway	None
Air Quality Non-Attainment Area	None

Last updated October 2011

	Togiak NWR	Region 7 Total	All Other Regions Total
Acres	4,102,927	76,837,023	331,751,420
Traffic Counts	Not available	Not available	Not available
Visitation Count	8,000	1,407,698	43,074,701
Visitation Count Methodology	FWS Annual Performance Plan Workbook		
Safety - Reported Crashes	Vehicle - None reported (2003 to 2007, ADOT&PF) Airplane - 11 (1990 to 2011, FAA)	Vehicle - 1,811 (2003 to 2007, ADOT&PF) Airplane - 145 (1990 to 2011, FAA)	No comparable data available
Paved Road (Lane Miles)	0	8	595
Dirt Road (Lane Miles)	0	35	3,610
Gravel Road (Lane Miles)	0	173	4,391
Parking Lot (Count)	0	90	2,045
Paved Trails (Miles)	0	1	21
Unpaved Trails (Miles)	4	174	256
Boardwalks (Miles)	0	8	47
Trail Bridges (Count)	0	4	27
Culvert Bridges (Count)	0	2	52
Road Bridges (Count)	0	0	238
Floating Docks (Count)	0	2	37
Stationary Docks (Count)	0	2	68
Airstrips (Count)	0	3	4

Identified Transportation Planning Needs	Traditional use determination
Existing Partnerships	Alaska State Parks
Alternative Transportation Opportunities	None reported
Climate Change Threats	None reported
Natural and Cultural Known Threats	Public off-road vehicle use, and vandalism, looting, and trampling of archaeological sites
Natural and Cultural Possible Threats	Fuel barge spills (including hazardous material)

Distribution of Core Transportation Assets by API vs. FCI



Trails (Unpaved)

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U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Yukon Delta National Wildlife Refuge

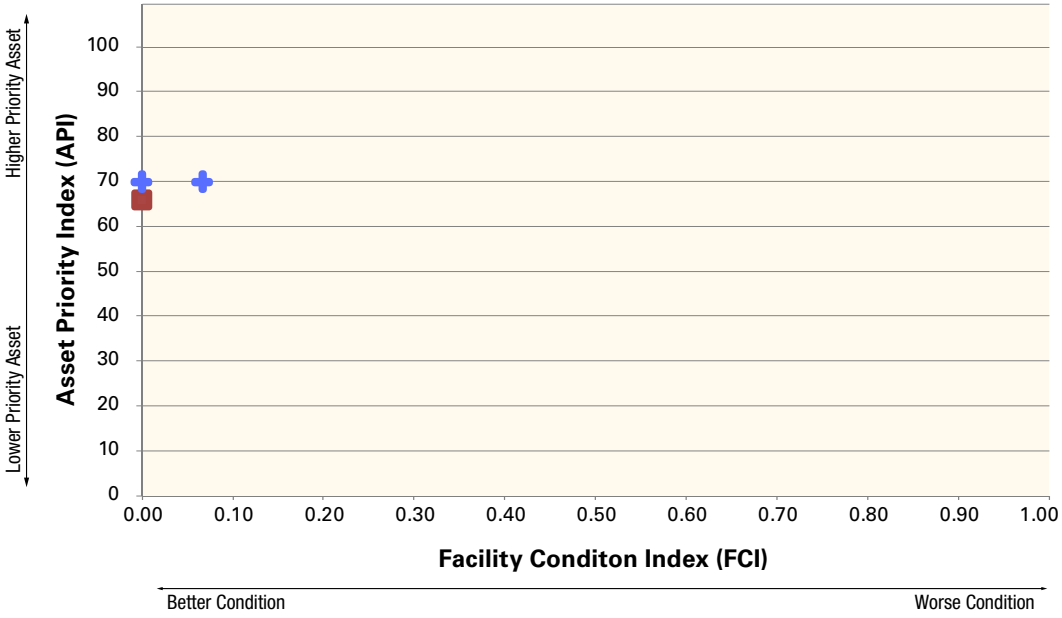
Access Methods and Locations	Hooper Bay, Tuntutuliak, aircraft from Bethel; boat from the Yukon and Kuskokwim rivers, and Bering Sea
Nearby Federal Land Management Agencies	Togiak NWR, Innoko NWR, BLM lands
Alaska DOT Region and Borough	ADOT&PF Central and Northern Regions; Wade Hampton Borough and Bethel Borough
Gateway Communities	Bethel, Chevak, Mary's Village, St. Mary's, St. Michaels
Connections to State or National Trails	None
Scenic Byway	None
Air Quality Non-Attainment Area	None

Last updated October 2011

	Yukon Delta NWR	Region 7 Total	All Other Regions Total
Acres	19,163,016	76,837,023	331,751,420
Traffic Counts	Not available	Not available	Not available
Visitation Count	64,000	1,407,698	43,074,701
Visitation Count Methodology	FWS Annual Performance Plan Workbook		
Safety - Reported Crashes	Vehicle - None reported (2003 to 2007, ADOT&PF) Airplane - 75 (1990 to 2011, FAA)	Vehicle - 1,811 (2003 to 2007, ADOT&PF) Airplane - 145 (1990 to 2011, FAA)	No comparable data available
Paved Road (Lane Miles)	0	8	595
Dirt Road (Lane Miles)	0	35	3,610
Gravel Road (Lane Miles)	0	173	4,391
Parking Lot (Count)	0	90	2,045
Paved Trails (Miles)	0	1	21
Unpaved Trails (Miles)	0	174	256
Boardwalks (Miles)	2	8	47
Trail Bridges (Count)	0	4	27
Culvert Bridges (Count)	0	2	52
Road Bridges (Count)	0	0	238
Floating Docks (Count)	0	2	37
Stationary Docks (Count)	0	2	68
Airstrips (Count)	1	3	4

Identified Transportation Planning Needs	CCP Updates; Traditional use determination
Existing Partnerships	Yukon Health Corporation, FAA
Alternative Transportation Opportunities	Sled dogs
Climate Change Threats	Storm frequency and intensity
Natural and Cultural Known Threats	Roads (runoff, invasive species, etc.); public off-road vehicle use; and vandalism, looting, and trampling of archaeological sites
Natural and Cultural Possible Threats	Fuel barge spills (including hazardous material)

Distribution of Core Transportation Assets by API vs. FCI



Airstrip
Boardwalks

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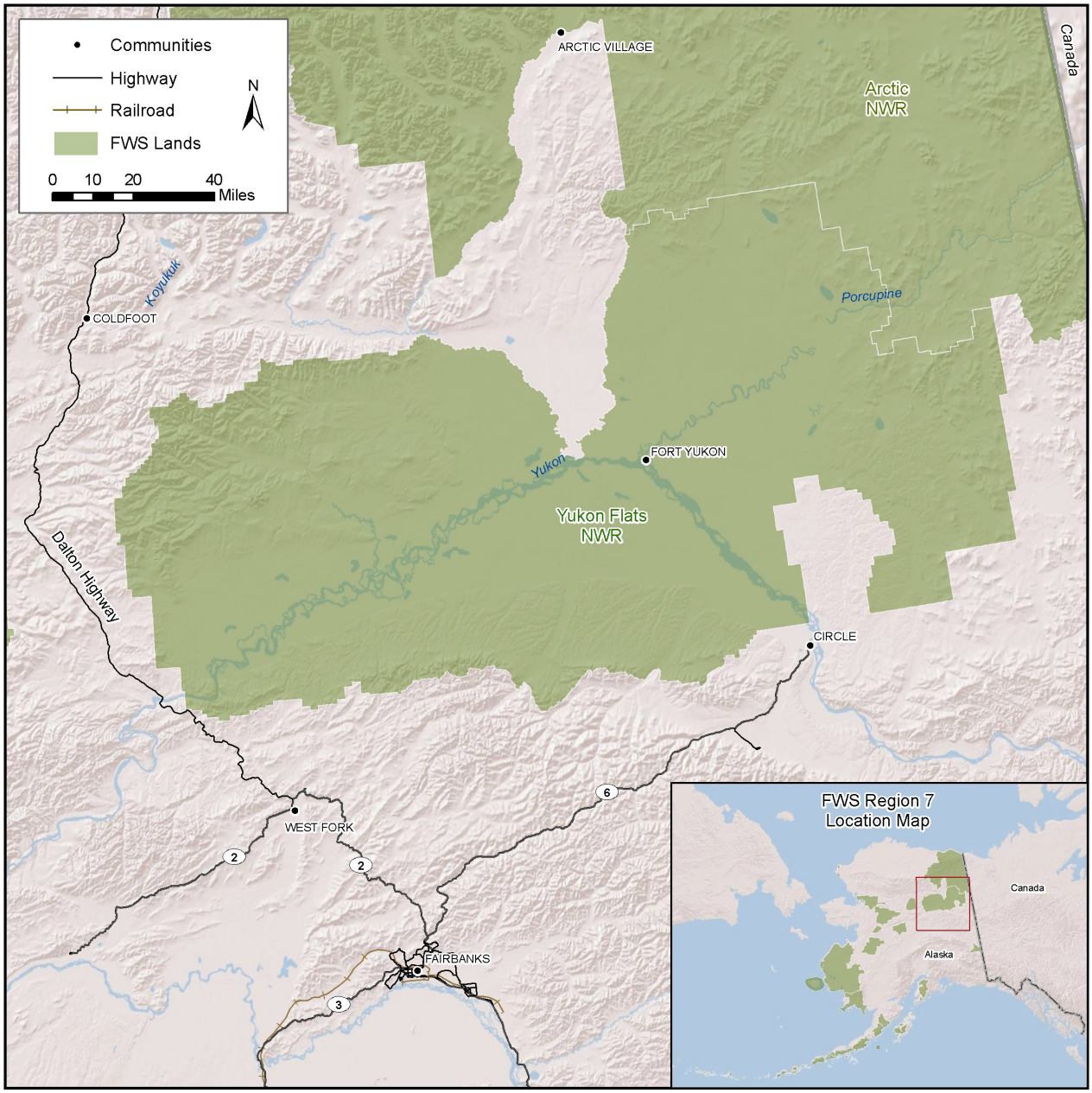
U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Yukon Flats National Wildlife Refuge



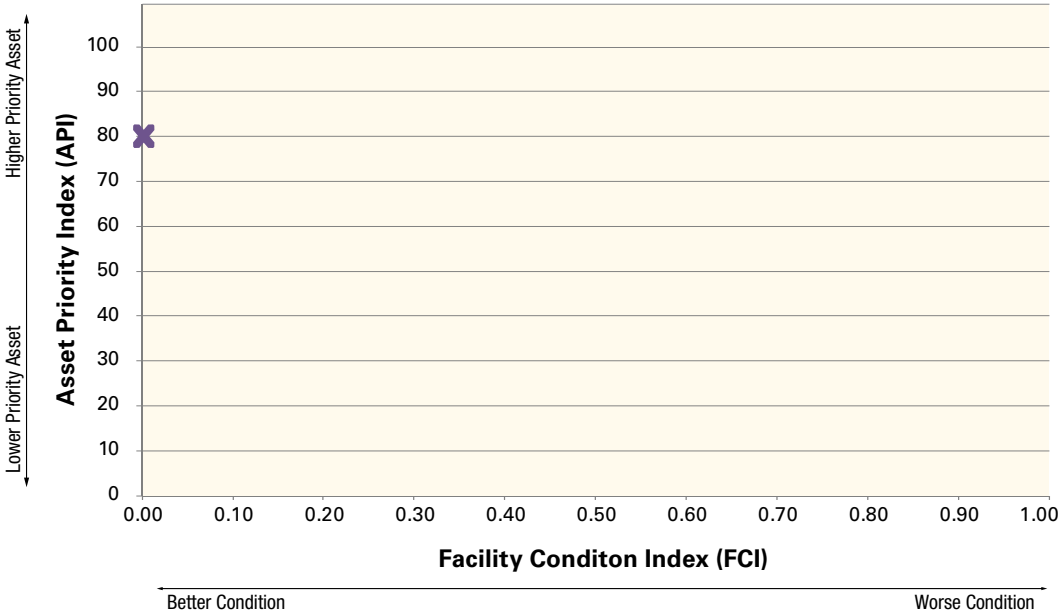
Access Methods and Locations	Dalton Highway, Fort Yukon, Fairbanks, boat on Yukon River, aircraft
Nearby Federal Land Management Agencies	BLM lands (Steese National Conservation Area, White Mountain National Recreation Area, and Trans-Alaska Pipeline Utility Corridor), NPS lands (Gates of the Arctic National Park, and Yukon Charley Rivers National Preserve)
Alaska DOT Region and Borough	ADOT&PF Northern Region; Yukon-Koyukuk Borough
Gateway Communities	Circle, Coldfoot, Fort Yukon
Connections to State or National Trails	None
Scenic Byway	Dalton Highway (State)
Air Quality Non-Attainment Area	None

Last updated October 2011

	Yukon Flats NWR	Region 7 Total	All Other Regions Total
Acres	8,635,511	76,837,023	331,751,420
Traffic Counts	Not available	Not available	Not available
Visitation Count	10,537	1,407,698	43,074,701
Visitation Count Methodology	FWS Annual Performance Plan Workbook		
Safety - Reported Crashes	Vehicle - None reported (2003 to 2007, ADOT&PF) Airplane - None reported (1990 to 2011, FAA)	Vehicle - 1,811 (2003 to 2007, ADOT&PF) Airplane - 145 (1990 to 2011, FAA)	No comparable data available
Paved Road (Lane Miles)	0	8	595
Dirt Road (Lane Miles)	0	35	3,610
Gravel Road (Lane Miles)	0	173	4,391
Parking Lot (Count)	1	90	2,045
Paved Trails (Miles)	0	1	21
Unpaved Trails (Miles)	0	174	256
Boardwalks (Miles)	0	8	47
Trail Bridges (Count)	0	4	27
Culvert Bridges (Count)	0	2	52
Road Bridges (Count)	0	0	238
Floating Docks (Count)	0	2	37
Stationary Docks (Count)	0	2	68
Airstrips (Count)	0	3	4

Identified Transportation Planning Needs	CCP Updates
Existing Partnerships	BLM, ADOT&PF, Alaska Fire Service
Alternative Transportation Opportunities	None reported
Climate Change Threats	Flooding
Natural and Cultural Known Threats	Flooding; wildlife; and vandalism, looting, and trampling of archaeological sites
Natural and Cultural Possible Threats	None reported

Distribution of Core Transportation Assets by API vs. FCI



Parking Lot

API: The asset priority index (API) ranks how critical assets are in accomplishing FWS mission and goals. Assets with an API closer to 100 are of higher priority whereas assets with ratings closer to 0 are of lower priority.

FCI: Facility condition index (FCI) is the ratio of deferred maintenance costs to replacement value. A larger FCI value indicates worse asset condition as there are higher costs to bring an asset back to full repair. A lower FCI value indicates better asset condition as less cost is required to bring an asset back to full repair.

Appendix D

Transportation Planning Needs

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Service Unit	Planning Needs						Non-Service Planning Jurisdictions		
	CCP	Transportation Safety Audit	Traffic Studies	Transportation Studies	Comprehensive	Traditional Use Defined in Plan	DOT Region	DOT Component Plans	DOT Corridor and / or Subregions
Alaska Maritime National Wildlife Refuge	S	Need Identified. See LRTP Table 22			Administrative access routes, military roads, etc	No	Central and Southeast	Southwest Alaska Transportation Plan	Pacific Coast Marine Corridor
Alaska Peninsula and Becharof National Wildlife Refuge	C					No	Central	Southwest Alaska Transportation Plan	Pacific Coast Marine Corridor, Alaska Peninsula Corridor and Cook Inlet to Bristol Bay Corridor
Arctic National Wildlife Refuge	I			Aviation, fuel availability	Visitor Use Step-Down Plan	Yes	Northern	Northwest Alaska Transportation Plan	North Slope Borough Subregion
Innoko National Wildlife Refuge (Southern Unit)	S			To be determined in upcoming CCP	Visitor Services Plan	Yes	Central/Northern	Yukon-Kuskokwim Delta Transportation Plan	Modal plans
Izembek National Wildlife Refuge	S	Need Identified. See LRTP Table 22		Identify priority transportation system Other studies to be in upcoming CCP	Need support during CCP development	No	Central	Southwest Alaska Transportation Plan	Pacific Coast Marine Corridor
Kanuti National Wildlife Refuge	C					No	Northern	Northwest Alaska Transportation Plan	Middle Yukon River Basin Subregion
Kenai National Wildlife Refuge	C	Need Identified. See LRTP Table 21	Need identified	Russian River congestion management		No	Central	Southwest Alaska Transportation Plan	(No overlapping corridor)
Kodiak National Wildlife Refuge	C					No	Central	Southwest Alaska Transportation Plan	Pacific Coast Marine Corridor
Koyukuk, Nowitna, and Northern Unit of Innoko National Wildlife Refuge	C			Non-Service proposed roads (ADOT&PF Roads to Resources)	Visitor Services Plan	No	Northern	Northwest Alaska Transportation Plan	Middle Yukon River Basin Subregion
Selawik National Wildlife Refuge	C	Winter route marking		Winter route marking, potential for proposed roads		No	Northern	Northwest Alaska Transportation Plan	Northwest Arctic Borough Subregion
Tetlin National Wildlife Refuge	C	Need Identified. See Table 21/22	Need identified			No	Northern	Interior Alaska Transportation Plan	Modal plans
Togiak National Wildlife Refuge	C				Need CCP amendment to address transportation	No	Central	Southwest Alaska Transportation Plan/ Yukon-Kuskokwim Delta Transportation Plan	Dillingham/Bristol Bay Area Corridor
Yukon Delta National Wildlife Refuge	S	Snow machine route		Snow machine, aviation use, moving communities	Need support during CCP development	No	Central/Northern	Southwest Alaska Transportation Plan/ Yukon-Kuskokwim Delta Transportation Plan	(No overlapping corridor)
Yukon Flats National Wildlife Refuge	S			Aviation, fuel availability, non-Service road proposals	Need support during CCP development	Yes	Northern	Interior Alaska Transportation Plan	Modal plans

C = Complete I = Complete, but update is in-progress S = Complete, but update is scheduled

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Appendix E

Partnership Review

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Partnership Review

This document is a collection of partnership excerpts from published U.S. Fish and Wildlife Service, Region 7 documents and brief interviews conducted to support the development of the FWS Region 7 Long Range Transportation Plan. Documents include Comprehensive Conservation Plans, newsletters, and official web pages.

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Innoko NWR

CCP Information

Refuge biologists routinely cooperate with biologists from the ADF&G and Bureau of Land Management (BLM) to assess status and trends of moose on and near the refuge. The refuge has cooperated with the U.S. Geological Survey, Biological Resources Division, on regional projects ranging in subject from bird monitoring to goose loafing studies, and the U.S. Department of Agriculture Natural Resources Conservation Service on monthly snow depth surveys. A revised landcover map and report was developed for part of the refuge and surrounding areas in 2002 in cooperation with BLM and Ducks Unlimited (Bureau of Land Management et al. 2002). The refuge assists the Department of Defense (U.S. Air Force) by conducting annual breeding bird surveys at Tatilina Air Force Base. The refuge is an active participant in Boreal Partners in Flight, an organization comprised of bird biologists from agencies and organizations in Alaska and Canada. Boreal Partners in Flight provides a venue for biologists to share information on species of concern, discuss inventory and monitoring techniques, and pool resources and data to address questions about bird populations.

Interagency cooperation is crucial when undertaking fire management activities. The BLM Alaska Fire Service (AFS) provides suppression services for Department of Interior agencies and is in charge of detecting, monitoring, and when appropriate and requested, suppressing fires on Federal lands in Alaska. The refuge's fire management officer works closely with AFS when developing fire management plans, attends AFS briefings during the fire season, and coordinates with AFS on activities on the refuge. The refuge staff also works closely with fire personnel with the Alaska Department of Natural Resources, Division of Forestry, fire center in McGrath.

The refuge has worked cooperatively with facility and students at the University of Alaska Fairbanks and at other universities, and with other agency biologists and tribal council representatives.

The refuge has been awarded Service challenge cost-share grants for activities on and near the refuge and in McGrath. Projects have included environmental education during Earth Week and a five-day summer science camp hosted by the refuge. Partners in McGrath-based cost-share projects included the Iditarod Area School District, Alaska Sealife Center, Alaska Bird Rehabilitation Center, Arctic Chapter of the Audubon Society, and ADF&G.

Wildlife research and public use are expected to increase on the refuge. Public and private partners will be routinely sought where mutual interests exist in research and monitoring topics and objectives. Such collaboration would be consistent with the tradition and pattern of cooperative research and monitoring used by the refuge since 1981.

Refuge Interview Information

Innoko NWR ensures that at least 80 percent of District K-12 students have an opportunity to participate in at least one environmental education program; and continuing to maintain and develop the partnership with the Alaska Geographic (formerly Alaska Natural History Association) and/or other cooperating associations to provide interpretive and environmental sales items on the natural and cultural history of the refuge and surrounding public lands.

Izembek NWR

Refuge Interview Information

A harbor proposal for the nearby town of Cold Bay is on the horizon for the Izembek NWR. This proposal would add a supply route and additional access to the refuge. Since the proposal would indicate more risk for fuel spills and invasive species, it would require refuge involvement.

The refuge partners with Aleutians East Borough for bus tours (19-seat bus). A lottery system held on the AMHS as there is not enough space for demand. FWS has 14-seat bus. There is also a naturalist on the ferry to provide visitor information. The Borough has a hovercraft (Tuesday, Thursday, and Saturday) – and now has naturalist on the hovercraft as well. From April-October there is a ferry system. It is a symbiotic relationship between all the agencies and departments involved.

- The following partner agencies include:
- AK Fish and Game, for wildlife surveys, etc.
- USGS for research (via boats)
- USGS for volcano observatory (via helicopter)
- Coastguard for exercises.
- FWS Migratory Birds (via planes)
- Biking community

Kanuti NWR

CCP Information

Refuge biologists routinely cooperate with biologists from the Alaska Department of Fish and Game (ADF&G), Bureau of Land Management (BLM), and National Park Service (NPS) to assess status and trends of moose on and near the refuge. They also cooperate on projects involving other species such as wolves and caribou. The refuge has cooperated with the U.S. Geological Survey on regional projects ranging from bird monitoring to heavy metals in snow. A landcover map and report were developed for the refuge and surrounding areas in 2002 in cooperation with BLM and Ducks Unlimited (BLM et al. 2002), and refuge staff assisted these partners with landcover mapping fieldwork elsewhere in interior Alaska. The map will be used as basis for evaluation of wildlife–habitat relationships and long-term, landscape level monitoring of vegetation resources.

The refuge is an active participant in Boreal Partners in Flight, an organization comprised of bird biologists from various agencies and organizations in Alaska and Canada. Boreal Partners in Flight provides a venue for biologists to share information on species of concern, discuss inventory and monitoring techniques, and pool resources and data to address questions about bird populations.

Interagency cooperation is crucial when undertaking fire management activities. The BLM Alaska Fire Service (AFS) provides suppression services for Department of Interior agencies and is in charge of detecting, monitoring, and—when appropriate—suppressing fires to protect identified values or meet land and resource management objectives on Federal lands in Alaska. The refuge's fire management officer works closely with AFS when developing fire management plans, attends AFS briefings during the fire season, and coordinates with AFS on activities on the refuge.

The refuge is fortunate to have ready access to expertise at the University of Alaska Fairbanks (UAF). Refuge staff has worked cooperatively with researchers at UAF to develop research proposals. UAF research staff have participated in refuge field projects and provided insight on study design, data analysis, and interpretation of results. The refuge has developed contracts with the UAF Museum bird, mammal, invertebrate, and herbarium departments. Researchers from UAF and other universities have served as advisors for graduate studies conducted on the refuge, and along with other agency biologists and tribal council representatives, have participated in the refuge's biological program reviews.

The BLM, NPS, and the Service are in partnership to manage and maintain the Arctic Interagency Visitor Center in Coldfoot. Since 1989, staffs from the three agencies have provided information to people traveling the Dalton Highway. The Alaska Natural History Association (now Alaska Geographic) financially supports interpretive and volunteer programs at the visitor center.

No permanent refuge staff members are stationed in Bettles year-round, although the need for that capability is documented in this Plan. The refuge shares an office and visitor center with the NPS in Bettles. The refuge cooperates with NPS to operate a small visitor contact station to provide information on both the Gates of the Arctic National Park and Preserve and the refuge. The NPS provides the refuge with exhibit space in their contact station.

Partners for Fairbanks-based Cost-Share projects have involved the Alaska Bird Observatory, Friends of Creamers Field, Arctic Audubon, ADF&G, and the UAF Student Activities Office. These projects have included International Migratory Bird Day events, Dragonfly Day at Creamer's Refuge, and co-hosting the Far North Conservation Film Festival as part of National Wildlife Refuge Week.

The refuge participates in Fairbanks-based activities that promote the role of the Service in conservation efforts and provide environmental education and outreach. These activities and the partners involved have included: Earth Day celebrations with local non-profit organizations, school group presentations during Outdoor Days and the Fifth Grade Bird Watch, and guest lecture presentations for groups such as the local Audubon chapter.

Wildlife research and public use are expected to increase on the refuge in the future. Public and private partners will be routinely sought where mutual interests exist in research and monitoring topics and objectives. Such collaboration would be consistent with the tradition and pattern of cooperative research and monitoring used by the refuge since 1992.

Refuge Interview Information

The following partner efforts are underway:

- Bettel nature trail efforts (City of Bettels, Evansville tribe, Park Service in Bettels)
- Tripods marking the trails (If DOT approached the refuge again, they would approve maintenance, which deals with the heavy equipment they would use)
- Partner: A lot of shared activities with the Park Service, and cooperation with BLM
- Partner: Invasive research work with Friends of Alaska

Kenai NWR

CCP Information

Cumulative Impacts: Although the Refuge has a well-developed Geographic Information System (GIS), it does not have the capability to forecast future impacts well. The Refuge recently partnered with several agencies and organizations to develop a model that is capable of projecting the cumulative effects of natural and anthropogenic processes in the boreal forest landscape on the Kenai Peninsula over 100 years. The Alaska Landscape Cumulative Effects Simulator (ALCES) is spatially stratified whereby GIS data are input by user-defined strata, and output is in tabular or graphic format for each spatial stratum. The user can track the number, area, and length of each land use footprint (e.g., seismic lines, roads) within each landscape stratum (e.g., coniferous forest, tundra).

Animal Conflicts: The Sterling Highway near mileposts 70 and 72 has some of the highest moose-vehicle collision rates for a rural road in the State. The Alaska Department of Transportation and Public Facilities proposed reconstructing the highway between mileposts 58 and 79, of which 18 miles occur within the Kenai Refuge. There is a growing national concern for reducing wildlife-vehicle collisions through wildlife crossing structures, signs, fencing, lighting, and other techniques.

Wildlife-vehicle collisions result in major financial costs in property damage, human injuries and/or fatalities, and wildlife losses. Moose—as the largest member of the deer family—cause the highest cost per accident. While moose make up 85 percent of the wildlife-vehicle collisions on this 21-mile stretch of highway, black and brown bears and caribou are also killed. The Refuge is working in partnership with the Federal Highway Administration, Alaska Department of Transportation and Public Facilities, Alaska Department of Fish and Game, Alaska Department of Public Safety, and the Alaska Moose Federation to reduce the number of wildlife-vehicle collisions while maintaining the permeability of the highway and enhancing habitat connectivity.

The Refuge is collecting three sets of data: movement data of GPS collared moose, wildlife-vehicle collision data and road kill reports, and data collected from a call-in wildlife hotline. These data, collected two years preconstruction, will be used to identify "hot spots" where significant crossings of the highway occur and use that to aid in the design and placement of wildlife crossing structures and other methods and techniques to reduce wildlife-vehicle collisions while maintaining wildlife corridors across the Sterling Highway. A postconstruction phase of the study will help determine the success of our cooperative effort.

Data: Refuge biologists and the Alaska Department of Fish and Game (ADF&G) routinely collaborate to assess status and trends of brown bear, moose, mountain goat, caribou, and Dall sheep populations. They also coordinate fisheries activities with the Kenai Fish and Wildlife Field Office and ADF&G. These activities range from management and research to gathering baseline data on fishery use on waters within the Refuge.

Christmas Bird Count Partnership: Refuge staff assists with the annual Audubon Christmas Bird Count.

Long-Term Ecological Monitoring Partnership: The Long-Term Ecological Monitoring Program (LTEMP) continues to be developed. The goal of LTEMP is to inventory and monitor biota on permanent points systematically distributed across the Refuge at five-kilometer intervals. Through a 2004 Memorandum of Understanding (MOU), LTEMP is formally linked with the U.S. Department of Agriculture Forest Inventory and Analysis program as an adjunct inventory.

Alaska Landscape Cumulative Effects Partnership Simulator: The Refuge continues to sponsor development of the Alaska Landscape Cumulative Effects Simulator (ALCES) through the nonprofit Kenai Watershed Forum (http://www.kenaiwatershed.org/effectsmodel.html). ALCES models the cumulative effects of natural processes and anthropogenic disturbances on the Kenai Peninsula (Peninsula). As a planning tool, ALCES can be used to evaluate future scenarios of management alternatives at the strategic level. An ALCES consortium was formally established among 11 partners with the signing of an MOU in 2005.

Invasive Species Partnership: The Refuge continues to expand its invasive species work through collaborative efforts with the National Wildlife Refuge System Invasive Species Program, U.S. Geological Survey-Biological Resources Division (USGS-BRD), National Institute of Invasive Species Science, and Burned Area Emergency Rehabilitation (BAER).

University Partnerships: Refuge biologists serve as adjunct faculty at the University of Alaska Fairbanks, Colorado State University, and the Alaska Pacific University, which furthers opportunities for graduate research in such topics as ecological constraints on marten distribution, climate change, arthropod taxonomy and distribution, rising tree line, and shrub invasion of drying wetlands.

Visitor Contact Partnerships: The Refuge Visitor Center, located in the headquarters area and operated in conjunction with the Alaska Natural History Association (ANHA), provides information and educational services highlighting natural and cultural resources and recreational opportunities on the Kenai Peninsula. In addition, the Visitor Contact Station located in the Skilak Wildlife Recreation Area—which is operated seasonally by volunteer Student Conservation Association interns—provides information and educational services to travelers along the Sterling Highway.

Environmental Education and Outreach Partnerships: Environmental education and outreach programs are conducted in coordination with the Kenai Peninsula School District, local homeschool groups, Scout groups, State agencies, other Federal agencies, local libraries, and other community organizations.

Refuge Interview Information

The following partner efforts are underway:

- Partners with Kenai Watershed Forum for issues related to boating, fishing, etc.
- Kenai River Special Management Area
- ADOT&PF on right-o-way in the Sterling and Hidden Creek Culvert, and the highway crossings
- The refuge also partners with non-profits for trail maintenance, volunteering, etc
- Troopers is a partner since they store helicopter at the Kenai hanger

Kodiak NWR

CCP Information

A Kodiak Archipelago Vegetation Cover Map, database, and report were completed in 2005. This information will be used as the basis for evaluating wildlife-habitat relationships and long-term, landscape-level monitoring of vegetation resources and human development. The project was initiated by Kodiak Refuge and the Alaska Geographic Science Center, U.S. Geological Survey. Partners who contributed funds necessary to complete the project included ADF&G, Kodiak Brown Bear Trust, Koniag, Inc., Rocky Mountain Elk Foundation, Bureau of Land Management, and the National Park Service.

The Kodiak Archipelago Bear Conservation and Management Plan, completed in winter 2002, was led by ADF&G and instrumentally supported by citizens of the Kodiak vicinity and by the Service. The plan recommends Refuge leadership and cooperation in a wide range of education, management, and research initiatives to benefit bears of the Archipelago. Because the Refuge supports many of the new initiatives, it incorporated them as objectives in the Conservation Plan.

Proposals to initiate Canada goose hunting in Game Management Unit 8 (Kodiak Island and vicinity) prompted population and genetic assessments. Objectives included determining the size of the winter resident goose population and subspecies type of birds using the Old Harbor vicinity for breeding and fall migration. Assessment results will guide decisions about goose hunting. Partners in the project include ADF&G, Alaska Maritime Refuge, Kodiak Refuge, Old Harbor citizens, and Alaska Biological Science Center, U.S. Geological Survey.

The Refuge, in cooperation with the Alutiiq Museum and Archaeological Repository, supports an active archaeological inventory program as well as a highly successful and expanding stewardship monitoring program to protect archaeological sites on Kodiak Refuge. The contributions of the Alutiiq Museum make these projects happen.

Refuge staff regularly assist with the annual Audubon Christmas Bird Count.

Refuge staff work with U.S. Coast Guard helicopters and crews to complete forward-looking infrared radar (FLIR) deer surveys.

The Refuge coordinates fisheries activities with ADF&G, several universities, National Marine Fisheries Service, and local Native village corporations. These activities range from management and research to gathering baseline data on fishery use on waters within the Refuge.

Wildlife research is expected to increase on the Refuge over the next 10 years. Public and private partners will be routinely sought where mutual interests exist in research topics and objectives. Such collaboration would be consistent with the tradition and pattern of cooperative research established by the Refuge during the last 15 years.

The Refuge visitor center provides information and education services highlighting natural and cultural resources and recreation opportunities on Kodiak Archipelago. It is operated in conjunction with the Alaska Natural History Association (ANHA).

Kodiak Summer Science and Salmon Camp offers week-long summer science camps. Camp sessions run throughout the summer and give local youth the opportunity to learn about Kodiak's most valuable resource—salmon. This camp is supported by a unique blend of public and private partners. A challenge cost-share agreement is made among the Service, the Alaska Natural History Association, and many private Kodiak contributors.

Environmental education and outreach programs are conducted in coordination with the Kodiak School District; village schools, councils, and elders; ANHA; Alaska Audubon; other state and federal agencies; and local museums.

Refuge Interview Information

The following partner efforts are underway:

- Partnership with the marine highway system
- Partnerships with some private corporation's land that they have easements
- The ferry system has plans for the entire length of their system and the refuge participated and had input in this process
- Local non-profit called Island Trails is discussing the development of a foot trail from town but the land ownership from village to refuge is mixed. The Refuge is contributing to this process.
- The refuge recalls proposals from adjacent communities to interconnect the villages on the island which would indicate new roads. Although the communities are of 100 people or less, the refuge is involved in these conversations.

Koyukuk NWR

CCP Information

Refuge biologists routinely cooperate with biologists from the Alaska Department of Fish and Game and the Bureau of Land Management (BLM) to assess status and trends of moose on and near the Refuge. The Refuge has cooperated with the U.S. Geological Survey, Biological Resources Division, on two regional projects (swan marking and banding and moose calf performance on winter range) and the Natural Resources Conservation Service (monthly snow depth surveys). A revised land cover map and report was developed for the Refuge and surrounding areas in 2002 in cooperation with BLM and Ducks Unlimited. The Refuge annually cooperates with the Boreal Partners in Flight and Friends of Alaska National Wildlife Refuges.

Interagency wildland fire cooperation is crucial when undertaking fire management activities. The BLM Alaska Fire Service (AFS) provides suppression services for all of the Department of Interior agencies in Alaska. AFS is in charge of detecting, monitoring, and suppressing fires on all federal and Native-owned lands.

The Refuge has been awarded Service Challenge Cost-Share Grants, which have focused on activities on and near the Refuge and in Galena. Cost-share projects have included Galena Science Camps, co-funding the UAF Interior-Aleutians Yukon-Koyukuk Center at Galena, a solar energy demonstration project housed at the Yukon-Koyukuk Center, a swan nesting ecological study, Nogahabara sand dunes cultural artifact and beetle surveys, oral history interviews with local trappers, and village invasive species workshops.

Wildlife research is not expected to increase considerably on the Refuge. Public and private partners will be routinely sought where mutual research interests exist and study objectives are similar.

From Refuge Interview

The following partner efforts are underway:

- Friends groups want to contribute to River Guide.
- BLM is a partner for invasive species along the river corridors and Poorman Road.
- Lauden Tribe youth program volunteers to pull weeds (takes place off site, but impacts refuge)
- One Road to Nome EIS alternative would bisect the refuges, so the refuge will participate in the process.
- The road to the dump that is along river will be gone soon because of erosion. The refuge is involved in the planning process for this.
- Also partnering with the tribe of Hossly for airport work because they want transportation through refuge. They managed to fill need without going through refuge.
- Hog River Mining company – getting ROW permit for existing road (not a traditional/official, SAMMS road or trail) for transferring equipment.

Alaska Peninsula – Becharof NWR

CCP Information

King Salmon Visitor Center, providing information and educational services highlighting the natural and cultural resources and recreation opportunities on the Alaska Peninsula; operated in conjunction with the National Park Service, Bristol Bay Borough, Lake and Peninsula Borough, and the Alaska Natural History Association (ANHA)

"Spirit of Becharof Lake" Ecosystem Science Camp, a week-long residential camp for rural high school students operated in partnership with U.S. Geological Survey (USGS) Alaska Science Center, Bristol Bay School District, Lake and Peninsula School District, Alaska Audubon Society, ANHA, and the Native American Fish and Wildlife Society.

Environmental education and outreach programs in coordination with Bristol Bay School District, Lake and Peninsula School District, scouting organizations, traditional village councils, village elders, Alaska Audubon Society, Ducks Unlimited, and Alaska Department of Fish & Game (ADF&G).

Moose trend surveys to determine population trends and composition conducted in conjunction with ADF&G and the National Park Service.

Design, development, and production of refuge-related interpretive education materials in cooperation with ANHA A creel survey of the sport fishery conducted at the Ugashik Narrows in conjunction with ADF&G

Annual spring breeding birds surveys conducted in conjunction with the National Park Service

Monitoring Avian Productivity and Survivorship (MAPS) continuing studies of bird populations conducted in conjunction with the Institute for Bird Populations

Bird counts conducted several times per year with the cooperation of partners, including the National Audubon Society, Partners in Flight, and USGS's Biological Resources Division

Annual bird banding performed in conjunction with USGS's Biological Resources Division

Participation in planning efforts with gateway communities, including the Bristol Bay Borough, the Lake and Peninsula Borough, and local villages (in recognition that the Refuges are important in the economic and social life of neighboring communities)

Ecoregional plans to identify key habitats and vegetation communities developed for all lands on the Alaska Peninsula, in the cooperation with the Nature Conservancy

Bristol Bay Native Corporation has suggested that the Ugashik Narrows is an area in which it could cooperate with the Service on studies and planning. The Service would be willing to participate in this. The State of Alaska would be included in any planning in this area because of the fishery resource and potential navigability issues.

Studies of archaeological sites at Ugashik Narrows conducted by the University of Oregon

Kanatak Trail Project: In all of Becharof National Wildlife Refuge's immensity, there are no designated hiking trails. The Kanatak Trail will become the first. For centuries, people have climbed over the mountains along the Pacific Coast to reach Becharof Lake and the Bering Sea. Every spring, the Alutiiq people who lived in Kanatak used the trail. In spring, they climbed over the mountains to reach Becharof Lake. In the fall, they returned to Fish Village, on the lakeshore, to prepare salmon. They went back over the mountains to Kanatak with their supplies of food to spend the winter where firewood was plentiful. The upper section of the trail is still there, with ancient rockpiles marking the way. But the lower sections of the route are now hard to find. The route is in danger of vanishing. The Student Conservation Association (SCA) has partnered with the U.S. Fish and Wildlife Service to rescue this historic trail.

During the month of June 2011, Student Conservation Association volunteers will work to clear the lower route of the trail, especially on the Becharof side. Work is expected to be completed by July 4, 2011.

The Kanatak Trail can be reached by airplane, landing on the Pacific Coast year-round, or by floats on Becharof and Ruth lakes. This limited access is a part of the appeal of the place, providing an experience of remoteness and solitude in a setting rich with wildlife.

Rather than provide signs along the trail, GPS points and maps will be available at the King Salmon Visitor Center and on the Refuge website. The Kanatak Trail is not intended to be highly developed. Visitors are expected to use their own good sense and route-finding abilities throughout the Refuge.

Telling the Story of Kanatak: The stories of people who know a place are part of what makes the landscape come to life. Refuge staff are interviewing former residents of Kanatak to capture their memories and pass them on. In written form and as video and audio podcasts, the stories of Kanatak will be available on the Refuge website and in the King Salmon Visitor Center. The Refuge is also collecting copies of old photos of the Kanatak area. Photos that have major landmarks in them can be retaken decades later, giving us a glimpse into how the landscape is changing over time.

From Refuge Interview

The following partner efforts are underway:

- Working with the DOI and coast guard on GRP
- NOAH and NPS are partners
- Togiak and Izembek are other refuges they coordinate with for the ferry
- Visitors center at the airport with NPS, Bristol Bay and Lake
- Canatik trail project
- ADFG (Alaska Department of Fish and Game) is another partner

Selawik NWR

CCP Information

Commercial guides and transporters for big game hunting provide public access to the Selawik refuge and wildlife resources on refuge lands. These services are regulated by the State of Alaska (i.e., Division of Occupational Licensing, Division of Natural Resources, Big Game Commercial Services Board, and Board of Game). It is essential that the refuge closely coordinate with each of these agency's respective programs when implementing program objectives and actions that involve harvest of wildlife on refuge lands.

The refuge is also adjacent to lands administered by the BLM and NPS. Guided clients and other hunters utilizing BLM lands adjacent to the Selawik refuge often harvest wildlife that regularly move in and out of the refuge. The refuge will work to benefit the public and the programs of both agencies by coordinating with the BLM when establishing numbers of guides and locations of base camps in drainages in and adjacent to the refuge.

The use of commercial guides and transporters for big game hunting has been a controversial topic in the region for a number of years (e.g., Georgette and Loon 1988; Jacobson 2008; Chapter 3, Section 3.4.2.3). There are numerous stakeholders involved in resolving the complex issues of access to wildlife resources and related social conflicts between non-local hunters and local subsistence hunters. The Game Management Unit 23 Working Group (Working Group), of which the Selawik refuge is a member, was formed in 2008 to collaboratively address these issues. The initial purpose of this group was to develop proposals and recommendations for ways to minimize user conflicts resulting from increasing numbers of hunters in GMU 23 through coordinated planning and management. The initial phase of this group's work has been completed. The group successfully established a one-time, mandatory training orientation for all commercial operators in the region that carry big game animals or their parts. The Selawik refuge intends to support the next phase of the Working Group as an active participant (Chapter 2, Goal 4, Objective 3). The next phase of the Working Group would serve as a way to monitor the effects of the preferred action alterative proposed in this Plan and a forum to address new issues on this topic as they arise.

In addition to the coordinated interagency efforts, a strong partnership with local village tribal councils and the private trespass officer program will remain paramount when making permit decisions, accurately analyzing the effect of the refuge's permitting program on subsistence users, and assisting in the enforcement of permit stipulations. Communication between the various law enforcement entities and those living within the refuge boundaries during the hunting seasons has many benefits. This is an example of improved communication that has resulted from the collaborative efforts of the Working Group and should continue to be encouraged and facilitated by the Selawik refuge and Service leadership.

From Refuge Interview

The refuge partners with BLM and NPS on trail marking projects.

Togiak NWR

CCP Information

Biologists of Togiak Refuge and the Alaska Department of Fish and Game (ADF&G) routinely collaborate to assess status and trends of Mulchatna caribou, moose, salmon, Dolly Varden, and other species for which shared concerns for management exist.

The Nushagak Peninsula caribou herd, which was reintroduced in 1988, is managed in partnership with the Nushagak Caribou Planning Committee with representatives from the six village councils that were instrumental in making the reintroduction successful. The committee meets to discuss herd management, harvest allocation, and other issues related to the herd.

The Mulchatna caribou herd occupies range that in recent years has encompassed parts of the Togiak Refuge Lake Clark National Park and Preserve, the Becharof and Yukon Delta National Wildlife Refuges, and BLM land interspersed throughout the region. In addition to cooperating with ADF&G in the status assessment and management of this herd, the refuge partners with the other affected Federal agencies and refuges that share this resource.

The Natural Resources Department of the Bristol Bay Native Association (BBNA) works with the Refuge in accomplishing a number of mutual objectives. Summer interns employed by BBNA provide valuable assistance on refuge projects each year. A traditional and ecological knowledge project undertaken by the Refuge with funding provided by the Office of Subsistence Management has received broad support from BBNA, including funding and staff time to complete the project. A partnership with BBNA to complete Office of Subsistence Management funded projects has been undertaken in the past and continues to be a component of any project for which the Refuge shares mutual objectives of information collection.

The Togiak Refuge serves as the setting for a number of Universities conducting studies on climate change. The Refuge has partnered with the University of Colorado, Northern Arizona University, Mount Holyoke College, and the University of Chicago to conduct analysis and long-term climate studies to help assess how flora and fauna may have changed over time in the region.

Education and outreach continues to be a central component essential to successful management of the Refuge. Partnerships with Southwest Regional Schools, Dillingham School District, and the Lower Kuskokwim School District, as well as all of the affected communities, allow this to be successful. Some of the elements of this partnership include the Bristol Bay Salmon Camp, Cape Peirce Marine Science and Yup'ik Culture Camp, and the Ecology and Outdoor Skills Camp held each summer. Classroom visits by refuge staff are made periodically during the school year to conduct environmental education programs, generate interest for the science camps, provide migratory bird calendar contest information, and other purposes.

A program of inholding acquisition has been taking place on the Refuge for a number of years. To implement this program, the Refuge works in partnership with the Southwest Alaska Conservation Coalition, which includes an array of Native interests, commercial operators, conservation groups, land managers, and others working together to protect natural resources of southwest Alaska.

The common occurrence of moose on many parts of the Refuge is a fairly recent phenomenon. Refuge staff work in partnership with ADF&G and the villages of Togiak, Twin Hills, Manokotak, and Dillingham through the Unit 17A Moose Management Working Group to monitor the status of the moose herd in that unit and develop management strategies. Work continues with the villages of Goodnews Bay, Platinum, and Quinhagak to develop management goals for expanding moose herds in drainages most used by those villages.

Refuge Interview Information

- The refuge is informed about what is happening in state planning projects.
- The refuge's visitor center is a joint effort with Alaska State Park. The land has been purchased and the design work is done.
- Dillingham floatplane facility will be working with ADOT&PF to study to improve the facility. Every two years STIP review for the region as it pertains to the Refuge.
- The refuge coordinates policy and procedures for travel with local Native corporations and Alaska State Park.

Yukon Delta

Refuge Interview Information

Yukon Delta is working with local villages regarding hardening trails for ATV use. FWS serves as a consultant on these efforts.

- Yukon Heath Corporation offers boating safety classes
- Regulations cover airport construction when birds are migrating
- FAA/refuge pilot testing equipment – "capstone project"

Yukon Flats

Refuge Interview Information

- Working with ADOT&PF on refuge roads issues. They are very receptive to the refuge needs.
- The refuge provided comments on an oil and gas exploration project in and around Steven's Village

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Appendix F

Federal Lands Highway Refuge Roads Program Guidance

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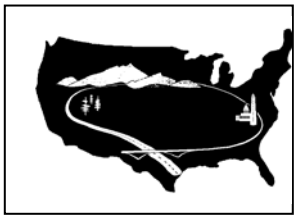
FEDERAL HIGHWAY ADMINISTRATION
&
U.S. FISH & WILDLIFE SERVICE



GUIDANCE ON THE FEDERAL LANDS HIGHWAY REFUGE ROADS PROGRAM

September 14, 2005

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INDEX

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Guidance Document For The Refuge Roads Program
Prepared by the Federal Highway Administration
in cooperation with the U.S. Fish and Wildlife Service
Revised September 14, 2005

Background:

The document provides guidance to help identify projects and project enhancements that may be funded under the Refuge Roads program (RRP) category. The basic eligibility requirements were established by the Transportation Equity Act for the 21st Century (TEA-21) and modified by Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). The legislation is codified in Title 23 - United States Code (23 USC). Section 204 of 23 USC requires that funds made available for refuge roads shall be used only to pay the cost of:

A) Maintenance and improvements of refuge roads.

B) Maintenance and improvement of eligible enhancement projects noted below that are located in or adjacent to wildlife refuges:
1) Adjacent vehicular parking areas,
2) Interpretive signage,
3) Provisions for pedestrians and bicycles and
4) Roadside rest areas including sanitary and water facilities

C) Administrative costs associated with such maintenance and improvements.

Examples of eligible items are included in the **Appendix**.

The construction of new roads is not authorized.

Title 23 USC 202(e) requires that the funds be distributed base upon relative need of the various refuges. In order to establish priorities, Title 23 USC 204(a)(6) requires that the Federal Highway Administration (FHWA) and Fish and Wildlife Service (FWS) develop and adopt by rule, safety, bridge, pavement, and congestion management systems as appropriate.

Public Roads:

Title 23 USC 101 (a) (28)) defines Refuge roads as public roads that:
1) Provide access to or within a unit of the National Wildlife Refuge System and,
2) Title and maintenance responsibility are vested in the United States Government.

Public roads are defined by 23 USC 101 (a) (27) as any road open to public travel. Because of the unique usage of refuge roads, this has to be further clarified by these guidelines. In order to be considered Public Roads, refuge roads must be opened to the general public during substantial parts of the year. Seasonal closures during nesting periods and inclement weather are permitted. However, roads only opened by permit to specific public interests, such as to hunters for

specified hunting periods or photographers to access photo blinds, are not considered public roads.

Scope of Improvements:

Roads:

The refuge road funds may only be used for rehabilitation to extend the service life of an existing road and enhance safety. Such work is also known as Resurfacing, Restoration, and Rehabilitation, (3-R). 3-R work includes the placement of additional surfacing materials and/or other work necessary to return an existing roadway including shoulders, the roadside, and appurtenances, to a condition of structural adequacy.

Most 3-R work occurs on the existing road bench. Refuge Roads work generally will not involve widening beyond the existing road bench or require the construction of new retaining walls, or cuts and fills. Exceptions where RRP projects could occur off of the road bench include work on drainage structures, existing retaining walls, slope failures, bridges, and spot traffic safety improvement work.

Construction of new roads is not authorized.

Bridges:

Eligible refuge road funded work on bridges includes approach fill rehabilitation, superstructure (deck, rails & girders) replacements, abutment and foundation repairs, abutment slope protection, foundation scour repair and protection work, and piling replacements. Small bridges or large box culverts may be replaced as part of a road improvement project.

Safety Projects:

Reconstruction of refuge roads for spot traffic safety improvement project work to correct identified safety problems at high accident locations may be undertaken with RRP funds. Such work is limited to specific sites (e.g. a curve or intersection) where a history of accidents have been documented, and where solutions have been developed to reduce accidents at the site. Studies of high accident sites may be funded out of a Region's RRP program.

Many of the limitations noted in this guidance do not apply to safety improvement work. Work could include roadway widening, realignments, new paving, new guardrails or walls, new sidewalks or bicycle paths for separation of traffic, street lighting, traffic signals or other improvements which can be expected to reduce the rate or severity of accidents at that location. In addition, needed safety work such as turning lanes on non-refuge roads intersecting with refuge roads may be included in RR funded projects. These projects must be coordinated with the agency having jurisdiction of the intersecting roadway and funding should be split with that agency if possible.

Design Standards:

Because this is a 3-R program and designers will be required to stay within the existing roadway prism, design standards for new construction and re-construction are typically not applicable. Since FWS has not developed 3-R design criteria, AASHTO design criteria should be the basis for development of design exceptions where traffic safety experience does not warrant improvements to full design criteria. Achievement of AASHTO standards usually will not be possible without demonstrated and documented safety deficiencies as noted above.

Program Effectiveness Measures:

The planned performance measure for refuge roads is the change in the condition of roads and bridges as measured by the Road and Bridge Inventory systems. Besides this degree of improvement shown for FWS Regions in the annual Road Inventory Program (RIP) condition surveys, the ratio of administrative costs to construction costs, and the average cost per mile for projects in each Region will be used by FWS and FHWA to measure how efficiently and effectively each Region operates its program.

Project Selection Priorities:

23 USC 202 (e) and 204 (k) (3) also provides guidance on criteria for selection of projects to be improved under the RR program. Projects shall be selected taking into consideration:

(1) The comprehensive conservation plan for each refuge.
(2) The need for access as identified through land use planning
(3) The impact of land use planning on existing transportation facilities
(4) The National Wildlife Refuge System Administration Act of 1966

Since 23USC requires funding to be eligible based upon the relative needs of the various refuges, the selection process should favor project items that improve the condition rating factors that help establish the needs. These factors include the road condition rating which considers the number of miles of fair, poor, and failed (deficient) roads.

23 USC 204(a)(6) also requires that roads in the Federal Lands Highway program develop asset management systems to help insure the efficient use of FLH funds. These include safety, bridge, pavement and congestion management systems as applicable. The guidelines for the Fish and Wildlife Service management systems are codified in 23 CFR 972.

The requirement for a bridge management system is being met by existing FWS bridge management program. The requirement for a pavement management system is being met by the FHWA inventory and condition assessment program for FWS managed public use roads. Given the limited number of areas with congestion and safety programs, these programs are not applicable to most refuges. The Regions will consider congestion and safety in project selection, and identify any areas of specific concern to the national refuge roads coordinator.

Appendix

Eligibility

Except when unusual safety concerns require, the following work that will not be funded under the RRP program:

1) constructing new parking areas or pullouts, widening off of the present road bench,
2) realigning and relocating roads (vertical or horizontal realignments), and
3) constructing new pedestrian trails or bicycle paths.
4) recurring maintenance practices such as grading roads and mowing roadsides.

Regions can obtain assistance for RRP project planning, design, compliance and construction contracting services from the Regional Engineering Offices, their respective Federal Lands Highways (FLH) Divisions, other Federal agencies (e.g. Corps of Engineers, Bureau of Reclamation, Forest Service, etc.) or consulting engineering firms. Such activities, including program formulation and coordination and project tracking, may be paid for out of available Regional RRP funds.

Project administrative costs such as travel for on-site reviews and meetings related to the RRP program may be included in estimated project costs. However, salaries of permanent staff in FWS Regions and Refuge field stations, who are base funded, can not be charged to the FLH Program project accounts. The only exception to this may occur to pay the overtime portion of force account work. However, this higher rate should have been used in the documentation justifying the use of force account work versus doing the work by contract.

The costs for any planning studies such as Road System Evaluations, or RRP Engineering Studies, will be the responsibility of each Region using their RRP funds.

As part of an overall RRP improvement project, Regions may use RRP funding for sign upgrades to meet the Manual of Uniform Traffic Control Devices standards. However, routine replacement due to wear and age is ineligible for FLH Program funding.

On a specific road improvement project, no more than 5% of the individual RRP improvement project funds may be used for non-roadway related improvements. Stand alone enhancement projects not associated with a specific road improvement project are not eligible for funding.

Specific Examples of Project Refuge Road Eligibility Criteria

The following lists provide general guidance as to what may be funded.

WORK ITEMS THAT ARE ELIGIBLE FOR FUNDING:

Project Support Items:

- Traffic engineering and safety studies.

- Identification and surveillance of accident locations.
- Road Inventories.
- Bridge, pavement, safety and congestion management systems.
- Necessary environmental studies and resource investigations confined to the general roadway construction limits.
- Project-related re-vegetation and control of invasive plants.
- Necessary architectural and landscape engineering services.
- Engineering design for roads, bridges, adjacent vehicle parking areas, provisions for pedestrian and bicycles, and roadside rest areas including sanitary and water facilities.
- Construction engineering for contract administration, inspection and testing.
- Necessary interagency program/project formulation meetings.
- Interagency program review meetings (per interagency agreement).
- Necessary interagency project coordination.
- Research part of coordinated technology implementation program.

Construction and Improvements Items:

- Resurfacing (milling, recycling and overlaying) existing pavements.
- Excavating and replacing failed base courses and poor subgrade materials.
- Replacing, upgrading or relocating deteriorated, undersized or poorly located drainage structures (aprons, inlets, culverts and headwalls etc.).
- Improvements to facilitate wildlife crossings, passage of aquatic organisms and habitat connectivity.
- Repair or upgrading existing guardrails or guardwalls.
- Minor widening of the roadway, realigning of intersections, adding of turn lanes, intersection islands, or pullouts, flattening of curves, or adjusting curve superelevation if the work can be accomplished on the existing road bench.

- Repairing, rehabilitating or replacing existing retaining walls if the estimated cost of a single wall or site is $200,000 or less.

- Repairing and or stabilizing landslides, severely eroding or failing slopes if the estimated cost of a single site is $200,000 or less.

- Projects off of the roadway bench may be allowed to widen or realign the road, construct new pullouts or add other features such as comfort stations and interpretive signage provided that they total no more than 5% of the project's construction costs.

- Removing or grinding existing pavement to convert a road to an aggregate surface.

- Replacing, upgrading or adding new pavement markings and signage to address changing traffic patterns, new uses or safety problems as well as to meet current standards if occurring in conjunction with an RR roadway project. Sign or marking replacement due to age, damage or deterioration is not eligible for funding, unless undertaken as part of a road rehabilitation project.

- Engineered pavement overlays that add structural value, design life or improved skid resistance.

- Double bituminous surface treatments and chip seals that are part of predefined stage construction or form final surface on low volume roads.

- Engineered rehabilitation or reconstruction of pavement structures, bridges and bridge decks.

- Engineered spot safety improvements resulting from safety studies.

- Upgrading of substandard traffic barriers and bridge rails to current standards.

- Replacement of nonstandard traffic regulatory and guide signs.

- Upgrading substandard or nonconforming traffic markings (one time only).

- A single refuge entrance sign if the sign conforms to FWS standards, is in a safe location, is part of an adjacent Refuge Roads project, and is of reasonable cost ($10,000 maximum including design, materials and installation).

- Accommodating traffic and pedestrians through construction zones.

- Public approach roads and interchange ramps that are under the jurisdiction and responsibility of the FWS.

- Installation of warranted roadway lighting.

- Adjustment of utilities directly related to roadway work.

- Conduits crossing under the roadway to accommodate future planned utilities.

- Landscaping and native plant seeding of areas disturbed by the RRP program projects.

- Landscaping required to meet Environmental Impact Study mitigation measures resulting from roadway construction.

- Construction of erosion control and environmental mitigation measures directly related to roadway construction.

- Experimental features where there is a planned monitoring evaluation schedule.

- Public parking lots or pull-offs to trail heads adjacent to RRP projects, interpretive areas, public lodging, visitor center, (including necessary supporting retaining walls, protective railings and adjacent perimeter sidewalk).

- Provisions for pedestrians and bicyclists within/adjacent to roadway prism when warranted for safety reasons.

- Maintenance and improvement of existing recreational trails in accordance with the FHWA/FWS Recreational Trails Guidance with total funding not to exceed 5% of the national program funds.

- Restoration of borrow pits created by projects funded from the RRP program.

- Force account and day labor, including materials and equipment rental being performed in accordance with approved plans and specifications, that has been determined to be cost-effective (public interest).

- All the aforementioned work can be performed on existing parking areas, pullouts, sidewalks or bicycle paths if the work is incidental to a RRP roadway project.

WORK ITEMS THAT WILL GENERALLY NOT BE ELIGIBLE FOR FUNDING:
(Funding will be determined on a case-by-case exception basis taking into consideration overall relative Refuge Road program priorities)

Project Support Items:

- Acquisition of scenic easements and scenic or historic sites.

- Brochures for public use unless they are prepared for refuges with roads impacted by improvements.

Construction and Improvements Items:

- Acquisition of alternative transportation systems unless it would facilitate visitor access and improve usage of the roadway system.

- Bike paths, unless they are part of the refuge unit's approved Comprehensive Conservation Plan, constructed in conjunction with RR program projects, and are:

    - part of a roadway prism necessary for safety reasons and if bike traffic warrants.

    - independent paths used for transportation and safety reasons based on accident and traffic data analysis.

- Construction of visitor information centers and related items.

- Construction of roadside rest area including sanitary and water facilities.

- Bridge painting work on structures (painting of major large structures considered on a case-by-case exception basis).

- Public roads which provide access to areas under the jurisdiction and responsibility of the FWS but which are not owned by the Service and/or are not required to be maintained by the Service.

WORK ITEMS THAT ARE NOT ELIGIBLE FOR FUNDING:

Project Support Items:

- General refuge planning.

- Non-program specific conferences, field trips, or training conferences.

- Cultural resources investigations and work outside roadway construction limits

Construction or Improvements Items:

- Construction of new access roads, new campground roads and related parking areas.

- Cyclic roadway maintenance work including chip and slurry seals (seal coats), pavement patching, roadway grading, shoulder and ditch grading, cleaning culverts, snow removal, roadside mowing, vegetation control, normal sign repair and traffic markings.

- Seal coats on top of new asphalt concrete pavements.

- Cyclic bridge maintenance work including cleaning and repairing bridge joints, cleaning repairing bridge drainage, and repairing other bridge appurtenances.

- Landscaping and irrigation systems of areas not disturbed by refuge road construction.

- Landscaping of disturbed areas with non-native plant species.
- Utilities and buildings not disturbed by construction.
- Sanitation facilities not disturbed by construction.
- Walls and erosion protection that are not part of or support the roadway prism.
- Recreational boat launching facilities and ramps.
- General refuge development projects.
- Roads that serve only an administrative site such as refuge housing, maintenance area or refuge dormitory (or a combination of these).
- Roads that provide access to Refuge Headquarters which are not open to the general public (i.e., not a visitor center).
- Roads that are primarily used for administrative purposes and open to the public only for very limited periods during the year under restrictive conditions.
- Restoration of borrow pits (or portions of borrow pits) created by projects funded with non Refuge Road program funds.
- Repairs to or replacement of fences not disturbed by Refuge Road construction.

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Appendix G

2011 Region 7 Transportation Partnership Update Memorandum

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Memorandum

To: Seve Suder
National Coordinator, Refuge Transportation Program

From: Troy Civitillo
Region 7, Facilities Programs, Refuge Roads Coordinator

CC: *Region 7 Long Range Transportation Plan,* Appendix E

Date: 8/01/2011

Re: Region 7 Annual Transportation Partnership Update

In accordance with the partnership goal and communication objectives of the U.S. Fish and Wildlife Service Region 7 Long Range Transportation Plan's, the following partnership update memorandum has been prepared. This memorandum is intended to communicate the status of on-going activities and deliverables that relate to matters of partnership.

5-Year plan

The most recent 5-year transportation improvement plan was prepared in July 2011.

RIP / BIP data

RIP data was last collected in June of 2007 (Cycle 4). The next update is scheduled for 2012.

BIP data was last collected on June of 2007 (Cycle 4). The next update is scheduled for 2012.

Research Studies

No research studies have been recently completed or are currently underway.

Completed/Active Partnership Transportation Projects

No partnered transportation projects have been completed recently or are currently underway. Nevertheless, 13 of 14 Region 7 CCPs mention a desire for partnerships.

Performance Measure Reporting

Long range transportation performance measures are being reported in the *Region 7 Long Range Transportation Plan*. A draft of the plan will be released in the fall of 2011.

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Appendix H

Roadway Design Guidelines

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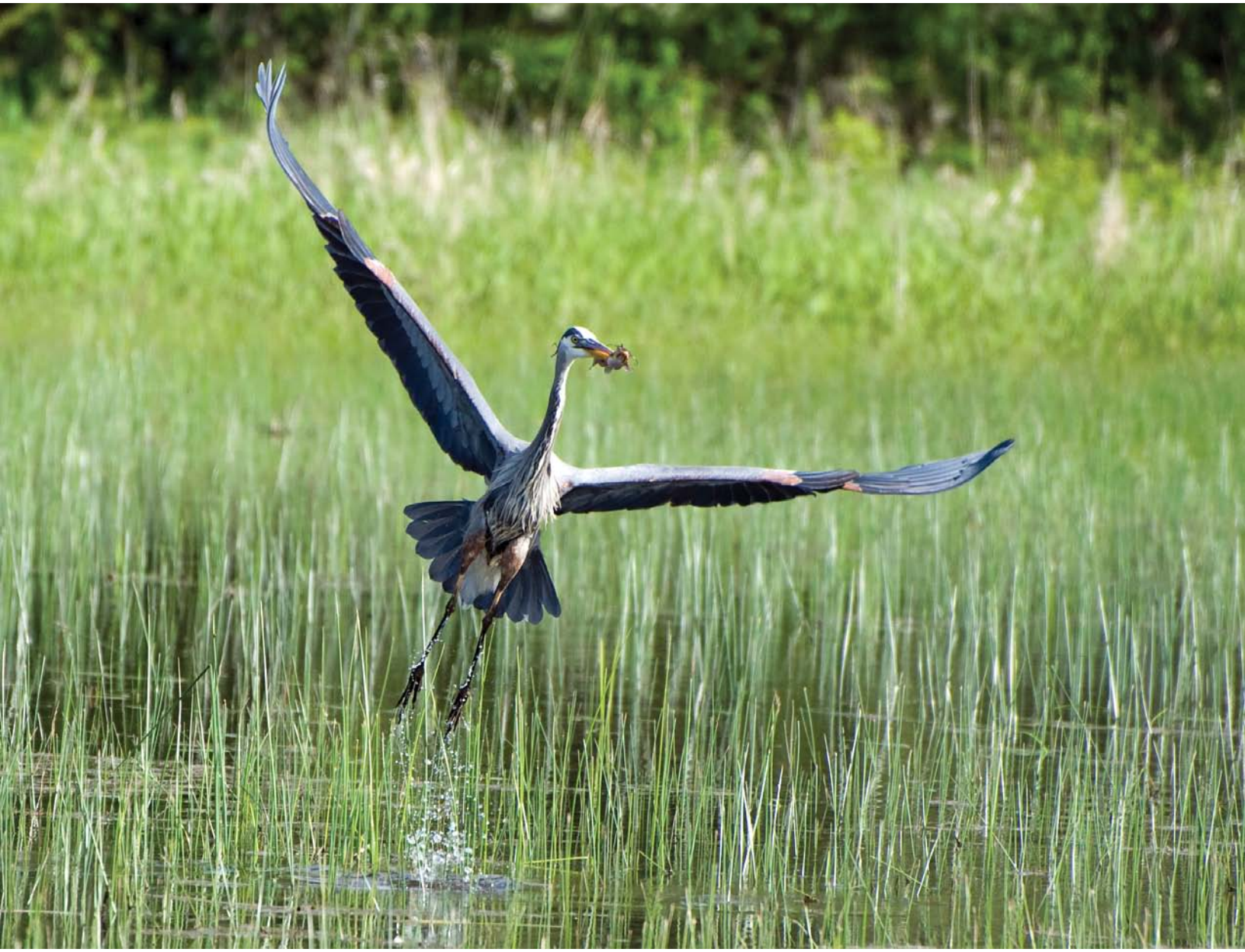
U.S. Fish & Wildlife Service

Roadway Design Guidelines



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Prepared By
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Cover: A Great Blue Heron flies off with its catch at William L. Finley NWR in Oregon. Roadways on National Wildlife Refuges provide opportunities for wildlife viewing and photography, two of the Big Six activities supported by the National Wildlife Refuge System.

Photo: George Gentry, USFWS

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Purpose

The U.S. Fish & Wildlife Service (FWS) is the world's premier conservation agency, managing over 150 million acres of wildlife habitat on National Wildlife Refuges alone. FWS is in a unique position to demonstrate the land ethic so deeply interwoven in the rich fabric of our national heritage.

This guide highlights state of the art ecological, planning, design and engineering considerations for roadway projects that heed both the significant benefits and impacts these projects present. Roadway projects on FWS managed lands should conform to planning and design criteria that have been established to support the FWS mission. This document provides such criteria in the form of guidelines. These guidelines are summarized in a table of contents that serves as a project checklist.

The Roadway Design Guidelines are a wayfinding tool intended to facilitate dialog and decision making among project teams. The guidelines have been crafted to support the interdisciplinary team typically involved with decision making regarding a roadway project: Project Leaders, Project Managers, and technical experts from various disciplines.

This document includes 30 individual project planning and design guidelines, organized around 6 major themes. The project checklist serves as an overview of these guidelines, and has been provided as a tool to assist in project planning, design and implementation.

In the pages that follow you will find information and resources that will be useful in your work on roadway projects. Using these guidelines is not an end in itself. Rather, the guidelines are a starting point from which to explore solutions to implement a roadway project of the highest standard. Every guideline begins with a brief discussion of the intent for presenting a particular topic, followed by supporting principles central to honoring the guideline, as well as associated metrics. Selected resources are provided to gain a deeper understanding of the topic.

Brian Bainnson

Eva Paredes/USFWS

Visitor contact facilities are often located in close proximity to roadways like this one at McNary National Wildlife Refuge (NWR) (top). Bison herd as viewed from roadway at the National Bison Range (bottom).

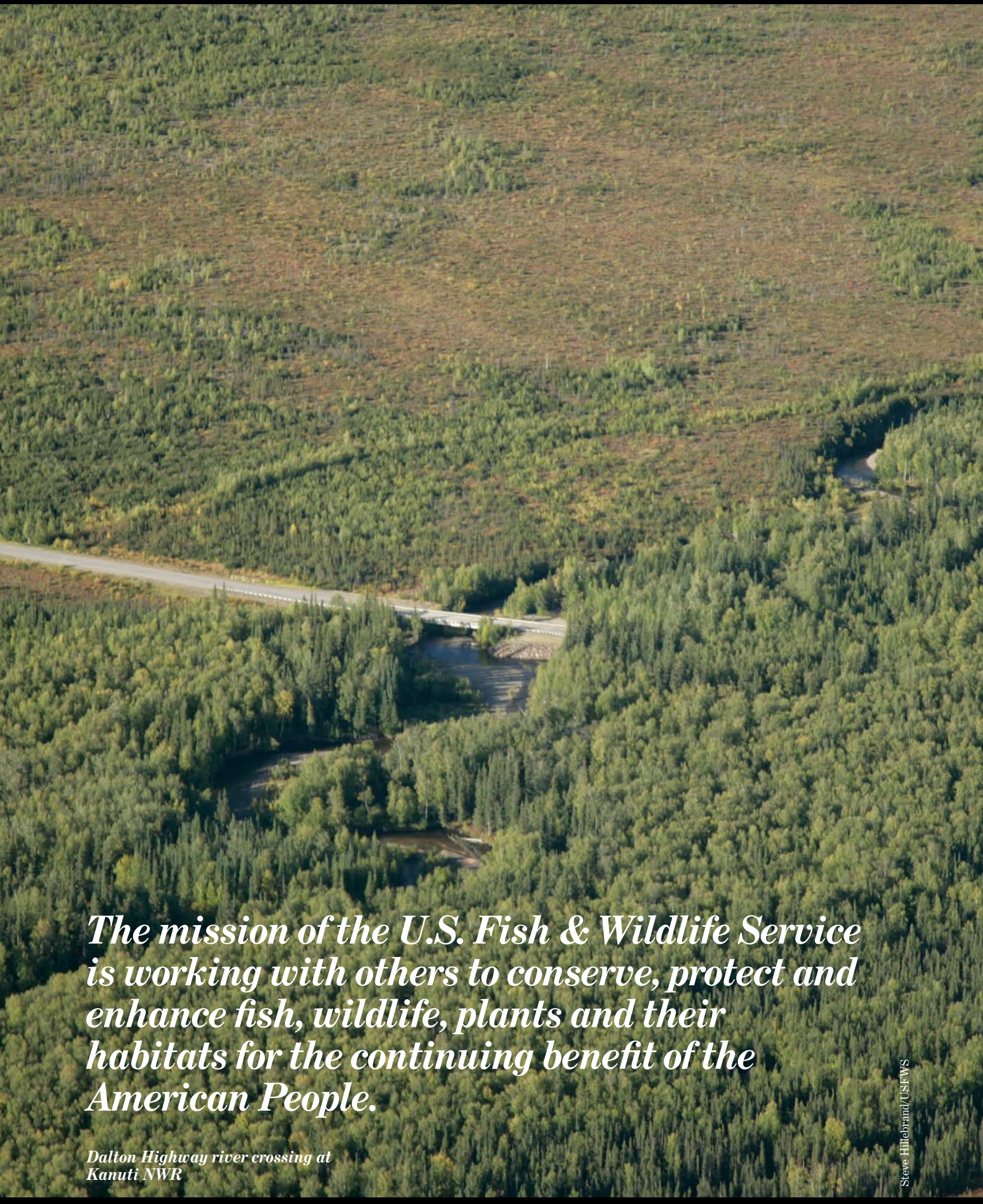
More Than Just A Road

A 'roadway' as referred to in these guidelines encompasses not only the suite of typical improvements associated with a vehicle-focused transportation project, but also related facilities such as parking, overlooks and the zone of ecological impacts from a road. These can be summarized as follows:

- **Typical transportation improvements** extend from the centerline of an existing or proposed road outward and include associated infrastructure components, such as paving, utilities, grading, drainage and planting.
- **Other facilities and infrastructure** commonly associated with vehicular transportation, include parking, visitor contact facilities, and pullouts.
- **Ecological connections and impacts** beyond the edge of the physical road or right of way, such as habitat fragmentation, habitat disturbance, pollution and aquatic and terrestrial species conflicts.

Moving Ahead for Progress in the 21st Century

Effective October 1, 2012, the existing Refuge Roads Program funded through previous Federal transportation authorizations is now called the FWS Transportation Program within the new Federal Lands Transportation Program. These new program details are described in the new transportation legislation called Moving Ahead for Progress in the 21 st Century (MAP-21). While still applicable to all refuge roads, these guidelines are generally applicable to all FWS transportation infrastructure and future improvements performed on this system of facilities and assets.



The mission of the U.S. Fish & Wildlife Service is working with others to conserve, protect and enhance fish, wildlife, plants and their habitats for the continuing benefit of the American People.

Dalton Highway river crossing at Kanuti NWR

Steve Hillebrand/USFWS

Project Checklist

LE – Landscape Ecology

- ☐ LE-1 Improve habitat connectivity
- ☐ LE-2 Reduce impacts to wildlife and habitat
- ☐ LE-3 Understand hydrologic processes of regional landscape
- ☐ LE-4 Respond to intrinsic qualities of regional landscape
- ☐ LE-5 Address climate change

PC – Planning Context

- ☐ PC-1 Review relevant planning, policy and regulatory information
- ☐ PC-2 Define level of service for the project
- ☐ PC-3 Evaluate multiple siting and alignment alternatives
- ☐ PC-4 Assess full costs and impacts of transportation system
- ☐ PC-5 Communicate with team and stakeholders

DE – Design and Engineering

- ☐ DE-1 Preserve and restore native vegetation and other natural resources
- ☐ DE-2 Consider and plan for invasive species management
- ☐ DE-3 Minimize cut and fill to fit with existing landscape
- ☐ DE-4 Consider road geometries for lower speeds, safety and alertness
- ☐ DE-5 Consider construction impacts and best practices
- ☐ DE-6 Consider range and sources of materials for sustainable construction
- ☐ DE-7 Consider maintenance

OP – Organism Passage

- ☐ OP-1 Develop your corridor plan for crossing
- ☐ OP-2 Provide and enhance aquatic organism crossings
- ☐ OP-3 Provide and enhance terrestrial wildlife crossings
- ☐ OP-4 Evaluate the need for wildlife fencing and other guiding features
- ☐ OP-5 Consider warning and safety systems for drivers

SM – Stormwater Management

- ☐ SM-1 Buffer habitat from polluted runoff
- ☐ SM-2 Protect habitat from erosive flows and flooding
- ☐ SM-3 Monitor and maintain stormwater facilities
- ☐ SM-4 Promote stewardship of aquatic resources

VE – Visitor Experience

- ☐ VE-1 Preserve and highlight scenic value
- ☐ VE-2 Promote and facilitate multiple modes of transportation
- ☐ VE-3 Comply with accessibility standards and guidelines
- ☐ VE-4 Facilitate compatible wildlife dependent recreation and education

Highway through Siletz Bay NWR provides travelers with visual access to the Refuge. The highway affects habitat connectivity and the landscape's hydrology.

David Pitkin/USFWS

Landscape Ecology

Landscape Ecology
Overview

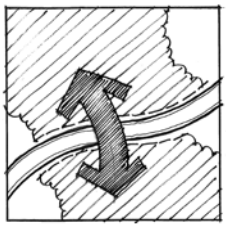
Pattern and Process
Roads and ecological function are intrinsically intertwined. Roadways on FWS managed lands in particular are frequently located in areas of high ecological importance.

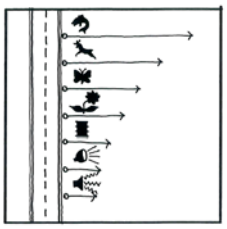
This section, Landscape Ecology, is intended to help you consider the broad-scale environmental impacts of your decisions regarding roadways and transportation infrastructure. It addresses a range of issues, providing you with a set of tools for decision-making.

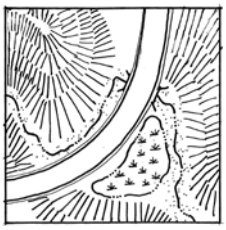
Any new roadway construction or improvements to existing roadways on FWS managed lands requires unique treatment, consistent with the mission of the Service and supported by a detailed understanding of refuge management goals. Improvements need to be made in a manner consistent with applicable laws such as the Migratory Bird Treaty Act (MBTA), Fish and Wildlife Coordination Act (FWCA), Bald and Golden Eagle Protection Act (BGEPA) and Endangered Species Act (ESA). While the guidelines in this section cover principles which are, in general, applicable across a broad range of environments, take time to consider the guidelines and their specific implications within the unique bioregional context in which your projects will occur.

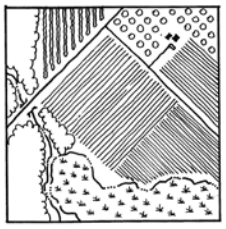
Research in the field of road ecology demonstrates that the multitude of adverse impacts of roads on landscapes, and the healthy function of the natural systems they traverse, are reduced by designing for slower travel speeds and lower traffic volume.

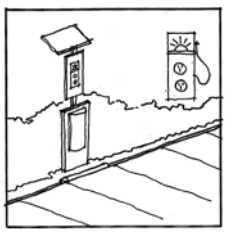
A significant component of a roadway project may be to remove roads from ecologically sensitive areas and restore those areas.











Landscape Ecology 101

Landscape ecology is the study of the relationship between spatial pattern and ecological processes on a wide variety of landscape scales and organizational levels. Some key landscape ecology concepts are:

Patch - Distinct area of a particular habitat or landscape type. Key considerations include size, number, location, and composition/contents. Small patches have a higher edge-to-interior ratio; some species thrive on edges, while others strictly prefer the qualities of a patch interior.

Edge - The shape, width, straightness, and other qualities of habitat or patch edges affects their performance and utility for various species.

Connectivity - This depends on distance, as well as other factors that may promote or inhibit movement between patches. A roadway may seem relatively narrow, but constitute a greater barrier than a broad field for some species.

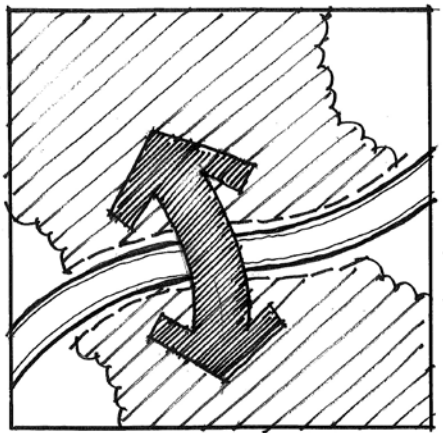
Mosaic - The bigger picture that includes the various patches and the matrix that contains them (e.g. areas of remnant woodland and wetlands, within a matrix of agricultural fields). Key elements include scale, grain (coarseness), patch diversity, and degree of fragmentation.

Roads form a **network**, which may be viewed as a **matrix** that contains a variety of habitat patches. They significantly affect connectivity, creating abrupt and harsh edge conditions, whose effects (such as light, noise, air quality, temperature, hydrology) can extend well into the adjacent habitat patches.

LE-1 Improve Habitat Connectivity

Intent

Roadways should be examined for their potential to impact habitat connectivity. Wherever possible such impacts should be minimized and/or mitigated. When a contiguous habitat area is bisected by a roadway, abrupt edge conditions are created. Such habitat fragmentation is generally undesirable. Hydrologic and soil community connectivity are also affected. Native plantings and other restoration activities associated with roadway improvements can be designed to support multiple habitat objectives, including buffering patch interiors and mitigating roadway impacts. In rare instances, roadway corridors may also serve as habitat connectors, linking otherwise fragmented communities.



Habitat connectivity is disrupted along any road corridor

Principles

- Identify and prioritize habitat restoration and connectivity opportunities at the landscape scale
- Review state habitat connectivity plans as well as applicable recovery plans for listed species
- Consider impacts and footprint of the entire roadway as defined in these guidelines
- Develop partnerships among land management agencies and the local FWS Ecological Services (ES) office
- Partner with neighbors
- Identify opportunities for individual projects to minimize impacts to wildlife and restore habitat connectivity

Metrics

- Trends in species mortality, avoidance, low population survival, sensitive or endangered species populations
- Decreased wildlife-vehicle collisions and/or roadway avoidance
- Distance between habitat patches
- Distribution of species/population along and across roadway

Resources

Overview of road ecology and guidelines for ecological road planning and design.

Forman, Richard, et al. 2003. Road Ecology: Science and Solutions.

Graphic explanations of landscape ecology principles.

Dramstad, Olson, and Forman. 1996. Landscape Ecology Principles in Landscape Architecture and Land-Use Planning.

Discussion of positive and negative impacts of roadways on adjacent vegetation.

Forman, Richard. 2002. "Roadsides and Vegetation." In Proceedings of the International Conference on Ecology and Transportation, Keystone, CO, September 24-28, 2001.

Roadway design guidelines from applied ecology and experiential perspective.

Jones, Grant R., et al. 2007. Applying Visual Resource Assessment for Highway Planning (pp.130-139) and Road Alignment (pp.330-341). In Landscape Architecture Graphic Standards.

Effects of roadways on wildlife (see also entire February 2000 Conservation Biology issue).

Trombulak, Stephen and Christopher Frissell. 2000. Review of Ecological Effects of Roads on Terrestrial and Aquatic Communities.

Wildlife conservation and planning efforts among the western states.

Western Governors' Wildlife Council. http://www.westgov.org/. Resources include the Wildlife Corridors Initiative Report (2008) and Wildlife Sensitivity Maps.

Habitat Connectivity

Habitat connectivity is a term commonly used in landscape ecology to describe the degree of connection between nearby or adjacent habitat areas. Distinct habitat areas are frequently referred to as 'habitat patches'. If the connection between these patches is not good, the resultant fragmentation can lead to loss of diversity within a given population of a species and potentially local extinction of that species from one or both patches. Even for fairly mobile species, a roadway can present a significant barrier to movement between patches.

Terrestrial under-crossing facilitates wildlife movement across a landscape fragmented by a highway in Banff NP, Canada

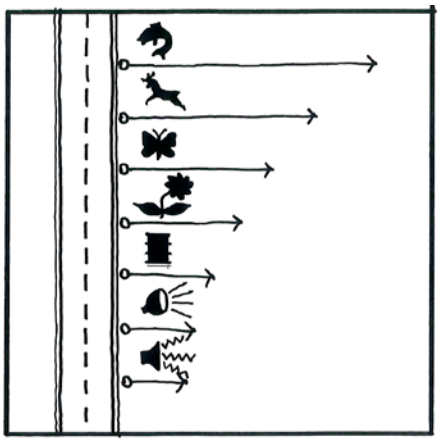
Patricia White/Flickr.com

LE-2 Reduce Impacts to Wildlife and Habitat

Intent

Roads have a significant impact on wildlife populations and habitat. Roads can directly impact wildlife through mortality (e.g. wildlife-vehicle collisions), roadway avoidance, habitat loss and habitat fragmentation. Wildlife-vehicle collisions are a safety concern for motorists. Traffic volume and roadway type directly relate to the severity of wildlife impacts. Roadkill data alone is not an accurate indicator of roadway impacts to wildlife, due to avoidance behavior and other issues. Mortality and avoidance are two species-dependent outcomes that may result from the barrier effect a roadway has on wildlife. In addition, maintenance practices, in combination with abundant edge habitat, can attract certain species of wildlife to a roadway, increasing the potential for conflict.

Consider roadway alignment, design, construction, and future maintenance methods that create the least detrimental impact to wildlife and habitats. Section OP (Organism Passage) discusses terrestrial and aquatic organism passage in more detail.



Impacts to wildlife and habitat extend outward from the roadway in various degrees, creating the 'road-effect zone'.

Principles

- Identify and limit the 'road-effect zone' and determine the potential exposure of ESA listed species and critical habitat to road effects within that zone. Minimize adverse effects to ESA listed species and critical habitat, and ensure any such effects are addressed through the ESA section 7 compliance process, as appropriate.
- Design for lower speeds, in order to minimize disturbance
- Consider management techniques to minimize disturbance to wildlife on auto tour routes
- Examine how road alters wildlife use patterns
- Examine how future effects on wildlife could make a project compatible (or not) with management goals
- Consider effects of noise, light and chemical pollution on habitats and wildlife

Metrics

- Reduction of wildlife-vehicle collisions
- Health of wildlife populations with habitats fragmented by or in proximity to roadways
- Road density (landscape ecology metric, see Definitions)
- Mesh size (landscape ecology metric, see Definitions)

Resources

Overview of road ecology, guidelines for ecological road planning and design. See especially discussion of road-effect zones, pp. 306-16.

Forman, Richard, et al. 2003. Road Ecology: Science and Solutions.

Latest information on road ecology as it relates to mitigating interactions between roads and wildlife.

Beckmann, J. P., et al. 2010. Safe Passages.

Identifying & prioritizing habitat connectivity zones, and guidelines for design solutions.

FHWA. 2008. Best Practices Manual, Wildlife Vehicle Collision Reduction Study (Report to Congress).

Effects of roadways on wildlife (see also entire February 2000 Conservation Biology issue).

Trombulak, Stephen and Christopher Frissell. 2000. Review of Ecological Effects of Roads on Terrestrial and Aquatic Communities.

Buffer design guidelines.

Bentrup, G. 2008. Conservation buffers: design guidelines for buffers, corridors, and greenways. Access at: http://www.unl.edu/nac/bufferguidelines/

See also:

Section OP - Organism Passage

Roadways have significant impacts on both individuals and populations.

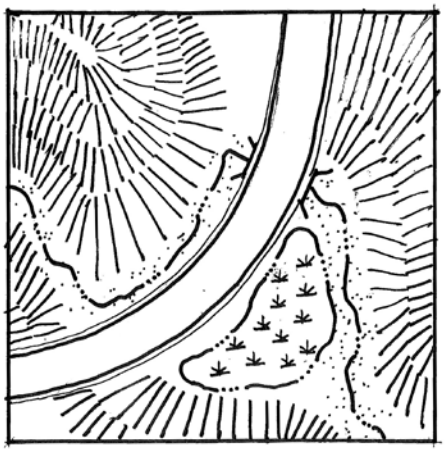
Mac Danzig Photography

Florian Schulz

LE-3 Understand Hydrologic Processes of Regional Landscape

Intent

Roadways can have dramatic impacts on hydrology at local, regional, and watershed scales. Disturbance to local hydrology is one negative impact to habitat caused by roadways. Impervious surfaces have a cumulative effect across a watershed, altering its hydrology and often creating detrimental consequences for wildlife. In some cases, the effects of a roadway on hydrology may be desired as part of a field station's approach to habitat management. Project teams should consider carefully how a roadway will impact local hydrology, or conversely how hydrologic processes can inform design decisions. Roadway improvements might support FWS management goals by addressing known issues and/or restoring historic hydrologic processes.



Roadways disrupt natural hydrology.

Principles

- Consider how road design may protect hydrologic processes
- Consider how to adapt an existing roadway for greater permeability
- Consider what effects the roadway might have on subsurface flows, water tables, and nearby aquifers, as well as how these elements affect construction options and feasibility
- Consider balance between restoring to pre-development conditions and maintaining historic alterations to hydrology
- Consider how development and roadway work will support current hydrologic and habitat management goals

Metrics

- Hydrologic modeling showing potential changes from roadways
- Stream flow data
- Changes in species composition (invasives vs. natives)

Resources

General reference on road ecology. See in particular overview of roadway effects on hydrology in Chapter 7.

Forman, Richard, et al. 2003. Road Ecology: Science and Solutions. Island Press. Washington D.C.

Guidelines that address hydrology impacts of roadways.

Smith, Stacy (Idaho Technology Transfer Center, Univ. of Idaho). 2005. BMP Handbook: Best Management Practices for Idaho Rural Road Maintenance.

Design guidelines for low-use roads, focusing largely on hydrology.

Weaver, William and Danny Hagans. 1994. Handbook for Forest and Ranch Roads: A Guide for Planning, Designing, Constructing, Reconstructing, Maintaining and Closing Wildland Roads.

Roadway design guidance for lower impact to hydrology.

Dashiell and Lancaster. Undated. Road Design Guidelines for Low Impact to Hydrology. Five Counties Salmonid Conservation Program. Weaverville, CA.

Guidebook on design and best practices for providing aquatic organism passage.

USDA Forest Service. 2008. Stream Simulation: An Ecological Approach to Providing Passage for Aquatic Organisms at Road-Stream Crossings.

See also:

Section SM - Stormwater Management

Roads both affect and are affected by hydrology. Floodwaters wash out a road at Flint Hills NWR (top); levee road at Blackwater NWR (bottom).

Eva Paredes/USFWS

Leon Reed/Flickr.com

LE-4 Respond to Intrinsic Qualities of Regional Landscapes

Intent

Every landscape has a rich natural and cultural history, a distinct composition of flora and fauna, unique weather, drainage patterns and views. Such intrinsic qualities contribute to each location's "sense of place," or context, which should be a guiding factor in work there. A contextual approach should be taken when planning and designing all roadways on FWS lands, and should be used for such decisions as road alignment and location of visitor facilities. Consider local vernacular architecture and land management traditions (e.g. local historic and sustainable agricultural practices), aesthetic issues such as viewsheds and practical issues such as seasonal access to recreational opportunities.

Principles

- Consider Context Sensitive Solutions (CSS) for general design guidelines and engage a landscape architect
- Develop benchmarking tools for ecological performance
- Consider what local land use traditions are consistent with FWS goals and management activities
- Respond to visual appearance of regional landforms, vegetation, and other natural features
- Review historic land use patterns and cultural practices
- Consider visitor experience and potential educational and interpretive benefits of road and visitor facility designs

Metrics

- Visitor satisfaction
- Ecological literacy of visitors
- Documentation of visual analysis (visual resource assessment) process (see Resources below)

Resources

Context-sensitive highway planning and design case study.

Kentucky Transportation Center. Undated. Context-Sensitive Design Case Study No. 1: Paris Pike - Kentucky.

Performance metrics for CSS design.

TransTech Mgmt., Oldham Historic Properties Inc., and Parsons Brinckerhoff Quade & Douglas for National Cooperative Highway Research Program. 2004. Performance Measures for Context Sensitive Solutions - A Guidebook for State DOT's.

Items to address or consider.

ODOT. 2006. Roadside Development Design Manual - Guidelines for Visual Resource Management, Landscaping, and Hardscaping (DRAFT).

Roadway design guidelines from applied ecology and experiential perspective.

Jones, Grant R., et al. 2007. Applying Visual Resource Assessment for Highway Planning (pp.130-139), and Road Alignment (pp.330-341). In Landscape Architecture Graphic Standards. Available at: http://www.jonesandjones.com/news/publications.html.

Guidelines for visual and context considerations for roadway design.

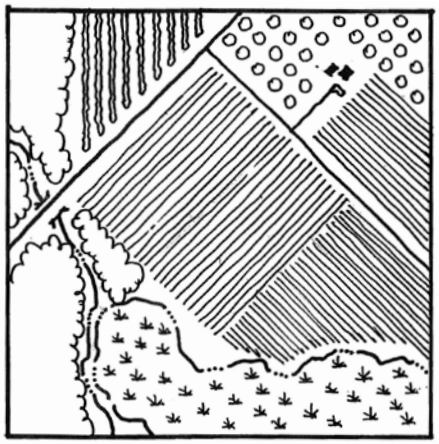
USDA Forest Service. 2002. Scenic Byways: A Design Guide for Roadside Improvements.

Transportation Research Board of The National Academies. 2002. A Guide to Best Practices for Achieving Context Sensitive Solutions (NCHRP Report 480).

Regional design guidelines.

New Mexico Department of Transportation. 2006. Architectural and Visual Quality Design Guidelines for Context Sensitive Design and Context Sensitive Solutions.

Nevada Department of Transportation. 2002. Pattern and Palette of Place: A Landscape and Aesthetic Master Plan for the Nevada State Highway System.



Historic land use patterns and natural features can help drive design.

Context Sensitive Solutions

The term Context Sensitive Solutions (CSS) refers to a decision-making process used by roadway designers and transportation engineers that accounts for many factors of a site's context—from topography and geology to cultural history and the intended users—during the planning, design, and maintenance of transportation facilities. Landscape architects played a leading role in developing this concept and are valuable team members for their expertise in determining how a project can appropriately respond to its context. Fundamental landscape architecture capabilities include identifying and expressing in built form the intrinsic qualities of a project's regional landscape.

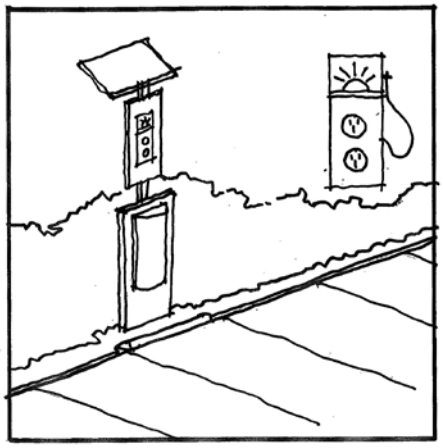
Leota Butte overlook at Ouray NWR provides an excellent landscape view.

Eva Paredes/USFWS

LE-5 Address Climate Change

Intent

Responding to climate change is a growing imperative for land managers and natural resource professionals, as well as the transportation and infrastructure sectors. Roadways on FWS managed lands may be particularly impacted because many are often in or near tidal zones, wetlands and floodplains. Factors to consider include how might roadways and visitor facilities be planned to reduce vehicle miles traveled (for visitors and staff); how will the roadways likely be impacted by changing weather and hydrologic patterns; and how might roadways be designed in a resilient and multifunctional manner that serves not only transportation, but perhaps other purposes such as protecting valuable facilities or habitat.



Facilitate greener transportation options.

Principles

- Provide alternative modes and means of access to FWS managed lands
- Consider potential climate change impacts when making decisions on location, scale and design life of infrastructure investments
- Consider construction materials and methods that have lower carbon footprints and climate impacts consistent with FWS and Department of the Interior (DOI) policies
- Use climate change research to inform transportation planning efforts at the landscape scale

Metrics

- Regional trends in weather-related damage and maintenance needs
- Vehicle miles traveled (VMT) on FWS roadways and associated greenhouse gas emissions
- Transportation modes used by visitors to reach and use FWS facilities
- Reports and data from the Emergency Relief for Federally Owned Roads (ERFO) program

Resources

Overview of transportation industry connection with climate change.

Transportation Research Board. 1997. Toward A Sustainable Future: Addressing the Long-Term Effects of Motor Vehicle Transportation on Climate and Ecology (SR 251).

Potential climate impacts of transportation sector and work towards reducing them.

Sperling, Daniel and Deborah Gordon. 2008. Two Billion Cars: Transforming a Culture. In: TR News, No. 259 (Nov-Dec).

Overview of general impacts of climate change on transportation infrastructure.

Transportation Research Board. 2008. Potential Impacts of Climate Change on US Transportation (TRB Report 290).

Regionally specific climate change impact information.

Climate Impacts Group. 2009. The Washington Climate Change Impacts Assessment.

Information, resources and organizations relating to sustainable transportation systems.

Green Highways Partnership. http://www.greenhighwayspartnership.org.

Assistance with emergencies and data on federally owned roads.

Emergency Relief for Federally Owned Roads (ERFO). http://flh.fhwa.dot.gov/programs/erfo/.

Official FWS climate change information and strategy.

http://www.fws.gov/home/climatechange/.

Climate change will impact roads on FWS managed lands. Road damage due to flooding at Arrowwood NWR (top); washed out bridge at Flint Hills NWR (bottom).

Eva Paredes/USFWS

Eva Paredes/USFWS

Planning Context

Planning Context
Overview

Planning the Process

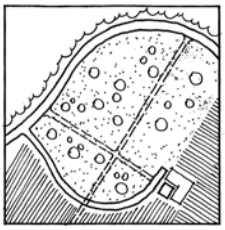
Guidelines in this section are intended to help you consider a roadway project in a broad context before advancing to the specifics of site design and engineering presented in sections DE, OP, SM and VE of these guidelines. It is important to consider how a particular project fits into the region's infrastructure, management and public access priorities, and how it might be most compatible with the conservation of listed species, the recovery function of critical habitat, and/or the conservation of FWS trust resources. Consider how the access a roadway enables and the impacts a roadway creates will fit into the management goals for the FWS managed lands it serves. The planning process can also help ensure that all applicable laws (e.g., FWCA, ESA, etc.) are appropriately addressed.

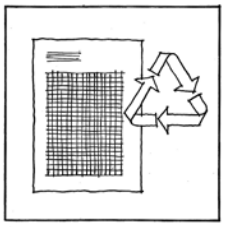
This section will help guide you to resources that will aid with or inform the planning process, as well as relevant documents that should be reviewed. It also serves as a reminder for project elements that are sometimes overlooked, such as developing a communications plan that addresses both internal and external communications about the project. Information regarding project prioritization, selection, and delivery is discussed in the Region's Long Range Transportation Plan (LRTP). Contact your Refuge Roads/FWS Transportation Coordinator for more information.

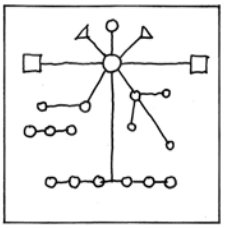
Selected project phases where the Roadway Design Guidelines are used by the project team

- Project identification and establishment
- Project scoping meeting(s)
- Establishing goals for the project
- Establishing scope, schedule, and budget for the project
- Establishing roles and responsibilities for the project
- Preliminary / schematic design phase
- Completed project assessment and monitoring

* Contact your Refuge Roads/FWS Transportation Coordinator for more information regarding how projects are planned and delivered in the region.







PC-1 Review Relevant Planning, Policy and Regulatory Information

Intent

Take advantage of lessons learned and research in relevant fields. Reviewing relevant background information ensures your project team is considering the most advanced and applicable contextual information related to a specific project. Consider what applicable legal and FWS policy requirements your project must respond to in order to be successful.

Principles

- Review local, regional and state transportation plans to determine how efforts by other agencies may inform your project planning and design
- Contact GIS staff to initiate data gathering and discuss mapping and analysis needs
- Review your Comprehensive Conservation Plan (CCP) and step down plan sections on transportation planning
- Conduct survey work and geotechnical investigations
- Review the Regional Long Range Transportation Plan (LRTP)
- Review existing asset management data and any asset management plans
- Review requirements of NEPA as well as other applicable state and local regulations
- Address ESA requirements as applicable
- Ensure consistency with applicable environmental laws such the FWCA, MBTA, and BGEPA.

Metrics

- List of related documents or case studies reviewed
- Concurrence from project team and stakeholders that relevant information has been reviewed and is ready to be applied to future phases of work

Resources

Overview of various systems of performance metrics.

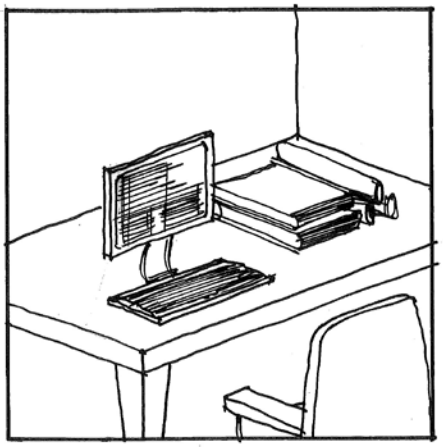
AASHTO. 2008. Guidelines For Environmental Performance Measures. NCHRP 25-25, Task 23. Prepared by Cambridge Systematics, Inc. Cambridge, MA.

NEPA information for EPA Region 10 (Pacific NW).

http://yosemite.epa.gov/R10/ECOCOMM.NSF/webpage/national+environmental+policy+act.

Guidelines for developing projects that work for local communities.

WSDOT. 2003. Building Projects that Build Communities: Recommended Best Practices.



Use in-house and online resources to find relevant case studies and up-to-date regulatory requirements.

Documents are shared and discussed during a project kickoff meeting at Umatilla NWR (top); a multidisciplinary team reviews resource documents during a project meeting in the Regional Office (bottom).

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Brian Bainson

PC-2 Define Level of Service for the Project

Intent

Your project team should identify what level of service (LOS) will be provided by roadways. This will help to adequately size facilities and ensure facility compatibility with current and anticipated demand. Designing for an appropriate LOS helps avoid over-building facilities, which can be costly. Plan to balance roadway improvements with wildlife conservation and habitat maintenance goals. Good phasing plans and cost estimates should be developed, keeping in mind that these may change over time, in response to changing visitor patterns, management priorities, or adjacent land use.

Principles

- Develop performance based, rather than prescriptive, goals and objectives
- Avoid unnecessarily over-designing facilities
- Consider utilizing partnerships and alternative transportation to accommodate special events that generate traffic or atypical demands on roadways
- Determine jurisdiction
- Decide whether roadways should enable more direct access to facilities or amenities
- Balance needs with resources and intended capacity and vehicle or user types
- Decide if and how it may be appropriate to promote lower design speeds
- Consider seasonal and multi-modal issues
- Examine case studies for other similar facilities in order to "right size" your facility for current and anticipated demands
- Consider Intelligent Transportation Systems (ITS) or other means of sharing traveler information to distribute traffic, inform visitors of seasonal closures and provide more trip planning
- Consider how the roadway can serve as a link to communities – gateways, access, etc.

Metrics

- Visitor use statistics (vehicle and trailhead)
- Visitor satisfaction
- Traffic and parking violations
- Traffic or congestion statistics
- Existing parking and roadway capacity

Resources

Design recommendations for various road types.

National Park Service. 1984. Park Road Standards.

Design recommendations for various road types.

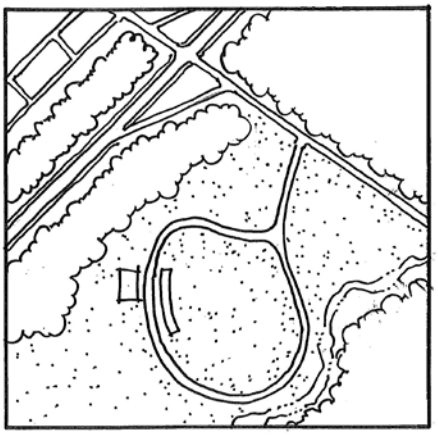
USDA Forest Service. 2002. Scenic Byways: A Design Guide for Roadside Improvements.

Regional guidelines for roadside development.

ODOT. 2006. Roadside Development Design Manual - Guidelines for Visual Resource Management, Landscaping, and Hardscaping (DRAFT).

Public involvement may help clarify visitor needs.

Peaks, Harold E. and Sandra Hayes. 1999. "Building Roads in Sync With Community Values." In Public Roads (Mar./Apr. 1999).



Determine the intended vehicles and traffic volumes for the roadway.

Level of Service

The term Level of Service (LOS) is commonly used among transportation planners to refer to the number of vehicles served. However users of these guidelines should also consider the term to include other elements, such as types of users, seasonality of use and modes of transportation that a particular roadway serves. Multimodal access refers to the ability of a transportation facility to provide access via a variety of modes, such as car, bicycle, public transit or walking. In keeping with the FWS mission, consider where it is possible and appropriate to provide multimodal access to FWS facilities, and whether the scale and type of roadway is in line with local management objectives.

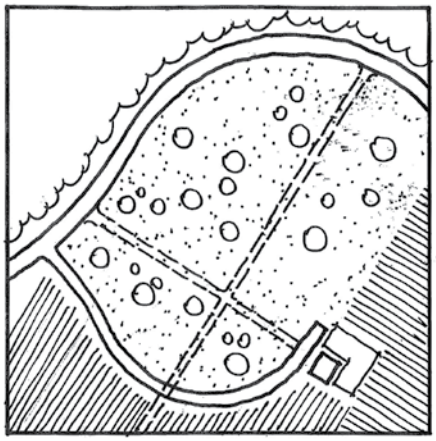
Wide gravel shoulder allows visitors to pull off of a 2-lane highway to view wildlife.

USFWS

PC-3 Evaluate Multiple Siting and Alignment Alternatives

Intent

Project teams should explore multiple design alternatives for roadway projects. A systematic alternatives evaluation process can be effectively used to arrive at a preferred alternative for further development. Alternatives development can reveal opportunities for projects to enhance visitor experience, protect wildlife, reduce ecological impacts to landscapes, minimize habitat fragmentation and provide alternative transportation methods. Reviewing a suite of alternatives will ensure that roadway decisions are compatible with the Service's mission and are made using the best possible information. The evaluation of alternatives will also support your NEPA process.



Explore and assess the effects of alternative road alignments.

Principles

- Determine if a roadway or road improvement is necessary
- Consider whether the roadway is in the right place
- Consider physical elements (e.g. hydrology), ecological effects (e.g. habitat fragmentation) as well as experiential factors (e.g. views, openness, arrival experience)
- Consider appropriateness of existing alignments versus potential alternatives
- Consider benefits or drawbacks of decommissioning existing facilities
- Determine how and when vehicles and people will move through the FWS managed lands
- Consider alternative modes of travel and potential for facility conversion, such as road to trail, trail in lieu of road, etc.
- Determine whether funding is tied to existing facilities

Metrics

- Comparison of road density for options considered
- Analysis of potential habitat fragmentation (e.g. vegetation or habitat mapping, wildlife tracking)

Resources

Case Studies.

Conboy Lake NWR, Visitor Experience Site Plan. Evaluated multiple vehicular and pedestrian circulation routes at HQ site. Contact Alex Schwartz, Project Manager (503/736 4723) for more information.

Umatilla NWR, McCormack Unit, Quarters Area Site Plan. Evaluated multiple roadway realignment concepts in conjunction with a new bunk house and residence. Contact Alex Schwartz, Project Manager.

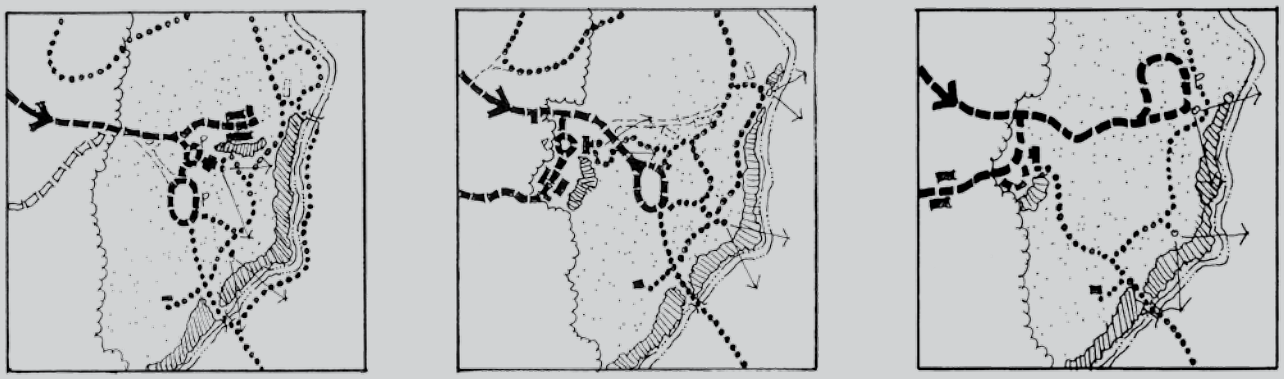
Roadway design guidelines using applied ecology and experience.

Jones, Grant R., et al. 2007. Applying Visual Resource Assessment for Highway Planning (pp.130-139) and Road Alignment (pp.330-341).

A decommissioned roadway is restored with native vegetation.

SvR Design

Evaluate Alternatives

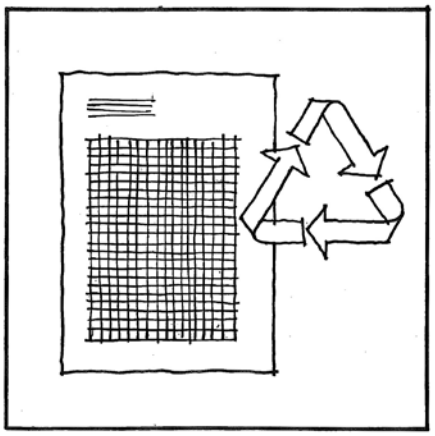


Conceptual site planning at Conboy Lake NWR evaluated three different alternatives for roadways on the site.

PC-4 Assess Full Costs and Impacts of Transportation System

Intent

Examine the full suite of costs associated with a roadway project in addition to the traditional design and construction costs. Consider the environmental impacts of the construction process and materials used, as well as future maintenance needs and costs. Projects that make sense in the near-term may not be environmentally beneficial or economically tractable in the long-term. Consider both environmental and monetary costs. Check resources for assigning monetary value to environmental costs.



Examine the characteristics of materials used in a project, including embodied energy and recyclability.

Principles

- Environmental impacts should be considered
- Evaluate the embodied energy of materials used
- Minimize externalization of environmental impacts through emissions and materials used
- Include comparison of costs of facilities for alternative modes of transportation in analysis
- Consider projected maintenance costs (often 65% of life cycle cost of an asset)

Metrics

- Carbon footprint (or ecological footprint)
- Vehicle miles traveled
- Long-term maintenance costs
- Life of pavement and other materials
- Greenroads rating system
- Life cycle costing (of total costs for construction and maintenance of a proposed transportation alternative)

Resources

Overview of various systems of performance metrics.

AASHTO. 2008. Guidelines For Environmental Performance Measures. NCHRP 25-25, Task 23.

Performance metrics for CSS.

TransTech Mgmt., et al. 2004. Performance Measures for Context Sensitive Solutions - A Guidebook for State DOT's.

Info & data on sustainable material.

Calkins, Meg. 2009. Materials for Sustainable Sites.

Overview of climate change impacts on transportation infrastructure.

Transportation Research Board. 2008. Potential Impacts of Climate Change on US Transportation.

Sustainability metrics.

University of Washington and CH2MHill. 2009. Greenroads Rating System, v1.0. http://www.greenroads.us/.

Example of triple bottom line assessment of infrastructure.

Stratus Consulting. 2009. A Triple Bottom Line Assessment of Traditional and Green Infrastructure ... in Philadelphia's Watersheds.

Triple Bottom Line in Transportation Management

The triple bottom line concept originates in business and accounting practices. It stipulates three key areas or 'resources' that should be addressed in measuring sustainability:

- Society (human capital)
- Environment (natural capital)
- Economy (financial capital)

This concept, also known as "people, planet, profit," offers an expanded spectrum of values and criteria for measuring a project or organization's success. Using this perspective in transportation management means that you would not only consider the long-term economic costs and benefits of a project, but also account for potential environmental and social costs and benefits over time.

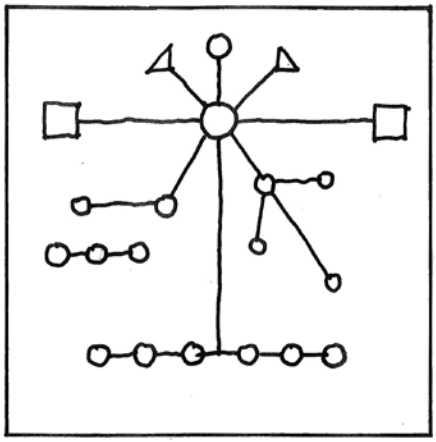
Road construction at Flint Hills NWR.

USFWS

PC-5 Communicate With Team and Stakeholders

Intent

Craft and document your approach for communications among your project team and with stakeholders. Ensure that roles and responsibilities are clearly defined in a project management plan. Carefully coordinate communications to help ensure consideration of a broad range of solutions in support of the best possible design outcome. Interdisciplinary project teams are the modern standard to ensure that work products are comprehensive and meet multiple objectives. Ensure that various elements of design are not overlooked and that there is organizational and public buy-in. Provide appropriate opportunities for involvement and review among your project team and stakeholders.



Develop a communications strategy and network.

Principles

- Address both internal and external communication needs in your project management plan
- Define clear roles and responsibilities for members of the project team
- Designate key agency contact(s) for all agencies/organizations involved
- Create a cross-functional (multi-disciplinary) team
- Develop design visualization and communication tools, such as graphics, plans, models, newsletters, web pages
- Identify the audience and develop solutions for communicating with people who don't read plans or technical documents
- Coordinate with transportation planning partners
- Contact Transportation Biologists in Ecological Services (ES) State Field Office to ensure project delivery is consistent with the mission of the Service
- Schedule project team meetings at regular intervals

Metrics

- Character and amount of public feedback on project
- Level of support and understanding of project within the organization
- Achievement of project goals

Resources

Guidelines for community and interdisciplinary planning process.

Lennertz, Bill, and Aarin Lutzenhiser. 2006. The Charrette Handbook. American Planning Association.

Case studies in collaborative management of wetlands and wildlife areas.

Porter, Douglas, and David Salvesen, eds. 1995. Collaborative Planning for Wetlands and Wildlife: Issues and Examples.

Public involvement for CSS.

Myerson, Deborah L., AICP, 1999. Getting It Right in the Right-of-Way: Citizen Participation in Context-Sensitive Highway Design. Scenic America. Available at: http://www.scenic.org/.

Public involvement for transportation projects.

Florida Department of Transportation. 2003. Public Involvement Handbook. Available at: http://www.dot.state.fl.us/EMO/pubs/public_involvement/pubinvolve.htm.

Members of Your Team

There are many professionals and stakeholder groups that you may want to include as part of your project team. Some possibilities include:

- Professional Engineers (PE)
- Landscape Architects (RLA)
- Transportation and Natural Resource Planners
- Field Biologists
- Project Leaders and Refuge Managers
- Refuge Roads Coordinators
- ES Transportation Biologists
- Representatives of other jurisdictions and agencies with local involvement

USFWS

Project staff and stakeholders meet in the field at Pelican Island NWR (right).

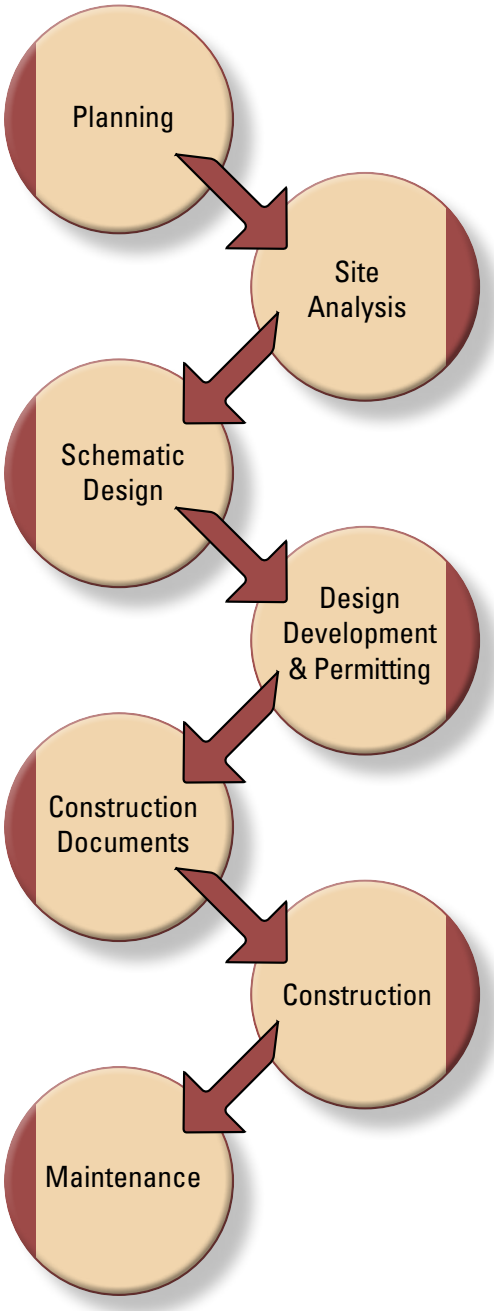
Design and Engineering

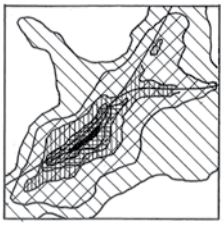
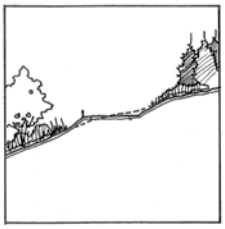
Design and Engineering
Overview

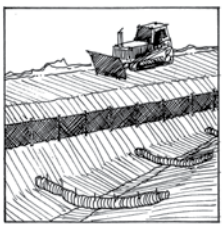
From Concept to Construction
This section recognizes that embedded in the technical aspects of a roadway project is the ability to directly support the mission of the Service. This section will guide you though a suite of considerations regarding the nuts and bolts of a roadway project, such as earthwork, alignment, safety, materials selections, vegetation preservation and management, construction practices and maintenance considerations.

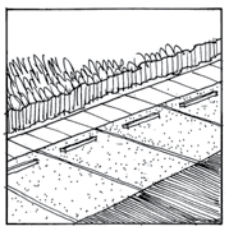
Designing a complete roadway project includes using methods and materials that minimize the environmental impacts of the roadway and associated construction work. It also involves developing a design that leads the roadway to function more often as a restorative system, helping to heal previously impacted or damaged natural environments. Working with an interdisciplinary team can greatly facilitate a holistic design and engineering process. Early coordination through the FWCA, and the ESA can provide valuable insight and expedite permit processes. A roadway design process can be approached methodically, beginning with a broad vision and narrowing down to the technical details and ultimately construction activities to make it happen. In the end, the project should be implemented in a manner consistent with FWS goals, applicable laws, and ideally, such that there is a benefit to the conservation of listed species and other FWS trust resources.

Process - Design to Construction



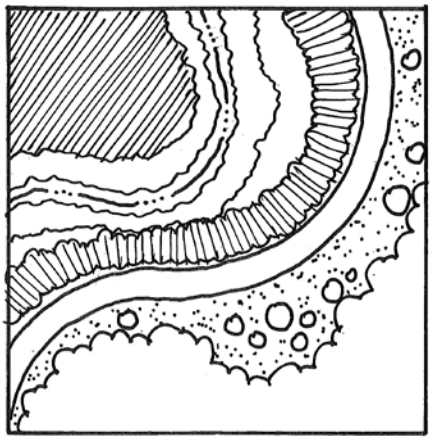


DE-1 Preserve and Restore Native Vegetation and Other Natural Resources

Intent

Roadway projects present opportunities to protect and restore native vegetation. Roadways commonly represent a barrier to wildlife and fragment habitat. However, roadway projects can represent an opportunity to heal historic wounds to a landscape and to ensure no further damage is done. Select roadway sites and alignments that avoid impacts to significant stands of existing vegetation. Look for restoration opportunities and consider what types of vegetation along roadway corridors are compatible with management goals.



Restored vegetation along road corridor can help support management goals.

Principles

- Explore ways to integrate restoration opportunities into project
- Consider how road surface conditions will affect nearby vegetation (e.g. dust, heat, other pollutants generated)
- Consider what types of vegetation and habitat along roadways will be compatible with management goals
- Use site prep and construction methods that protect and conserve existing native vegetation and natural resources
- Protect or stockpile and re-use healthy existing/native soils on site
- Protect heritage and other significant trees during and after construction (e.g. provide fencing, do not dig in or store material on top of root zones)
- Consider irrigation needs for establishing roadway vegetation
- Consider how invasive species will be managed during native vegetation establishment periods

Metrics

- Amount of post-construction restoration planned
- Vegetation surveys
- Reduced invasive species control needs

Resources

Regional guidelines for roadside development.

ODOT. 2006. Roadside Development Design Manual - Guidelines for Visual Resource Management, Landscaping, and Hardscaping (DRAFT).

Comprehensive guidebook on roadside revegetation.

FHWA. 2007. Roadside Revegetation: An Integrated Approach to Establishing Native Plants.

New technology to minimize pile-driving construction impacts to aquatic organisms.

Reyff, James. 2009. Reducing Underwater Sounds with Air Bubble Curtains.

Road alignment at Nestucca Bay NWR preserves upland vegetation and forest.

Alex Schwartz/USFWS

Brian Bainnson

This roadway project at Steigerwald NWR required integration of native vegetation restoration (right). The planting plan was prepared by a registered landscape architect. The plants were installed by a licensed landscape contractor. Work included a temporary irrigation system and a 1-year maintenance and warranty period.

DE-2 Consider and Plan for Invasive Species Management

Intent

Invasive species are a major issue for habitat restoration and wildlife management efforts. Roadways often serve as a significant vector for the spread of invasive species. Thus, particular attention must be paid to this issue in the planning, design and maintenance of road corridors and road networks.

Principles

- Inventory invasive species in the region that are already present and what steps have been taken to combat their spread
- Ensure that planting plans feature plant species and densities, as well as establishment techniques to limit future invasive establishment
- Consider latest tools and techniques available to combat spread of invasive species
- Examine relevant state and regional lists of invasive species threats
- Search for and consider lessons from other relevant projects, based on similar ecosystems and/or similar project types
- Develop pre-project baselines to measure success of future management goals
- Address and plan for invasive species management during construction and general use
- Create an invasive species management plan following local Best Management Practices (BMPs), addressing both roadside and adjoining habitats
- Minimize disturbance and project footprint, including mobilization and staging areas

Metrics

- Invasive species survey data
- Staff time dedicated to invasive species management (and how that changes over time)

Resources

Invasive species along roadways from the perspective of road and landscape ecology (see Chapter 4, pp. 75-111).

Forman, Richard, et al. 2003. Road Ecology: Science and Solutions.

Establishment and maintenance of native plants along roadways.

Harper-Lore, Bonnie and Maggie Wilson, editors. 2000. Roadside Use of Native Plants. Available online at: http://www.fhwa.dot.gov/environment/rdsduse/index.htm.

FHWA. 2007. Roadside Revegetation: An Integrated Approach to Establishing Native Plants.

Guidance on roadside weed management.

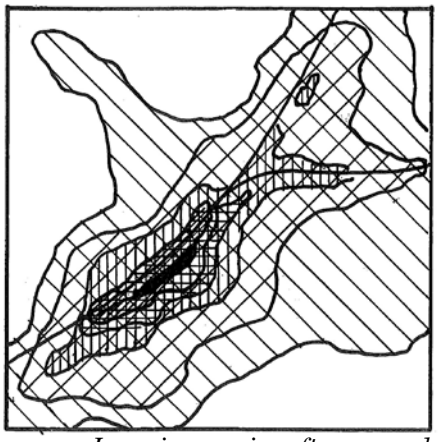
Ferguson, Leslie, C. L. Duncan and K. Snodgrass. 2003. Backcountry Road Maintenance and Weed Management.

Comprehensive list of roadside vegetation management resources.

Center for Environmental Excellence by AASHTO - Invasive Species/Vegetation Management, Reseach, Documents & Reports web page. See: http://environment.transportation.org/environmental_issues/invasive_species/docs_reports.aspx.

List of many resources on controlling invasive species, from construction best practices to ongoing maintenance.

Wisconsin Department of Transportation (WisDOT). 2003. Best Practices for Control of Invasive Plant Species.



Invasive species often spread outward from roadways.

Selected Steps for Invasive Species Management

- Post-construction maintenance plan
- Minimize disturbance
- Retain shade to the extent possible
- Know the quality of topsoil and mulch; avoid importing contaminated topsoils
- Know the quality of seed sources
- Clean equipment that has had contact with weed sources
- Over-sow disturbed areas with native seeds
- Avoid nitrogen fertilizers in the first year

List adapted from FHWA Roadside Revegetation Manual. See section 5.8 in manual.

Ryan Hagerty/USFWS

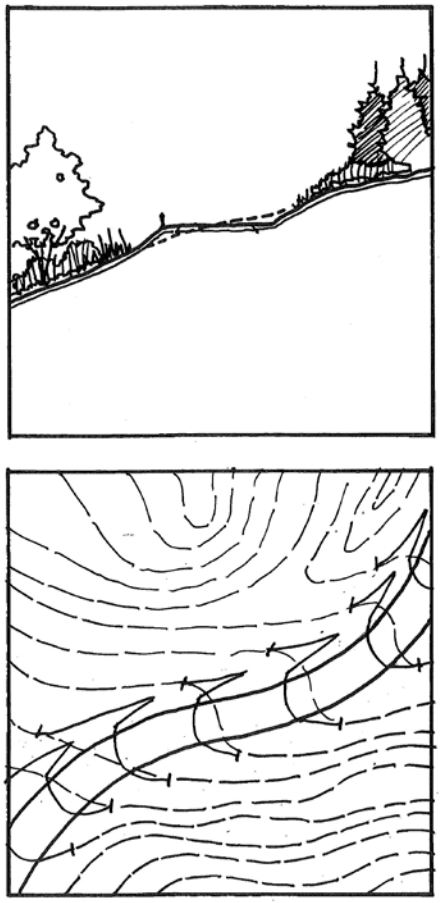
Controlling invasive species after their spread can be labor-intensive; spraying melaluka in FL (right).

DE-3 Minimize Cut and Fill to Fit With Existing Landscape

Intent

Roadways can be designed to fit with natural topography and seamlessly integrate with the landscape character. By studying the natural topography, designers can attempt to select a road alignment that will take advantage of views, while also minimizing the visual impact of the road itself. Conforming to the natural topography can minimize interruptions to the natural hydrology, and may help to preserve other important natural features, vegetation and habitat.

Elevated structures are often preferable for wildlife and habitat connectivity, and should be considered where possible. If that results in a cut/fill imbalance then seek innovative ways to use fill material. Examples include using excess fill material to construct pullouts, scenic viewpoints, and trailheads. Earthwork considerations discussed in this guideline are appropriate for both new construction projects and alterations or improvements to existing roadways.



Fitting in with existing topography is key to minimizing impacts.

Principles

- Consider roadway alignments that will minimize and balance cut and fill volumes
- Consider alternative structures to reduce fill volumes (e.g. bridge vs. culvert, etc.)
- Use roadways to highlight Refuge habitats as they follow existing terrain
- Look for continued opportunities to minimize and improve "aesthetic wounds"

Metrics

- Earthwork volumes per mile (compare to similar projects)
- Balanced cut and fill volumes
- Visual resources assessment

Resources

See cut and fill guideline on page 83.

USDA Forest Service. 2002. Scenic Byways: A Design Guide for Roadside Improvements.

Case study on context sensitive solutions (CSS) for scenic highway.

Kentucky Transportation Center. Undated. Context-Sensitive Design Case Study No. 1: Paris Pike - Kentucky. College of Engineering, University of Kentucky. Lexington, KY.

Guidelines on appropriate lower-impact road alignment.

Jones, Grant R., et al. 2007. Applying Visual Resource Assessment for Highway Planning (pp.130-139) and Road Alignment (pp.330-341). In Landscape Architecture Graphic Standards. Hoboken, New Jersey: John Wiley & Sons. Available at: http://www.jonesandjones.com/news/publications.html.

Road design guidelines.

FHWA. Undated. Flexibility in Highway Design. FHWA Pub. No. FHWA-PD-97-062. Found at: http://www.fhwa.dot.gov/environment/flex/index.htm.

Common standard on roadway design.

AASHTO. 2004. AASHTO A Policy on Geometric Design of Highways and Streets, 5th Edition (aka 'Green Book). Washington, D.C.

Guidelines for design of very low volume roadways.

AASHTO. 2001. Guidelines for Geometric Design of Very Low-Volume Local Roads (ADT ≤ 400), 1st Edition. Washington, D.C.

Gravel roads maintenance and design.

Skorseth and Selim. 2000. Gravel Roads Maintenance and Design Manual. South Dakota Local Transportation Assistance Program (USDOT - FHWA).

Roadway terraced along hillside at Hart Mountain NWR responds to opportunities and constraints of the topography

Fort Photo/Flickr.com

DE-4 Consider Road Geometries for Lower Speeds, Safety and Alertness

Intent

Low speeds can help protect wildlife, increase the value of roadside habitat and provide a greater degree of safety for all roadway users. In addition to improved safety for wildlife and roadway users, low travel speeds are compatible with the Big Six public uses. Low road speeds help to encourage alternative modes of transportation, including walking and bicycling. Lower actual speeds are achieved through deliberate roadway geometry and design, not simply signage.

Curving roads with varying views can promote alertness and lower speeds.

Principles

- Road alignments may include continuous curves, spiral curves, curving alignment, etc. in order to support safety and alertness
- Consider how curvilinear road geometries achieve multiple objectives and can specifically support habitat and wildlife management goals
- Consider the effect of road surface on travel speeds
- Determine and design around a roadway 'design speed' so that people will *want* to drive slower
- Consider safety and engineering standards that are applicable to the roadway's context

Metrics

- Road speed and volume study
- Accident reports
- Visual resources assessment
- Balanced cut and fill volumes
- Protection of vegetation and habitat
- FHWA Road Safety Audit

Resources

Design guidance based on human behavior patterns.

Transportation Research Board of The National Academies. 2008. Human Factors Guidelines for Road Systems.

Guidelines on appropriate lower-impact road alignment.

Jones, Grant R., et al. 2007. Applying Visual Resource Assessment for Highway Planning (pp.130-139) and Road Alignment (pp.330-341). In Landscape Architecture Graphic Standards. Hoboken, New Jersey: John Wiley & Sons. Available at: http://www.jonesandjones.com/news/publications.html.

Road design guidelines.

FHWA. Undated. Flexibility in Highway Design. Access at: http://www.fhwa.dot.gov/environment/flex/index.htm.

Standards for roadway design.

AASHTO. 2004. AASHTO A Policy on Geometric Design of Highways and Streets, 5th Edition (aka 'Green Book).

Handbook with design guidance on appropriate construction techniques for low traffic volume roads.

Weaver, William and Danny Hagans. 1994. Handbook for Forest and Ranch Roads: A Guide for Planning, Designing, Constructing, Reconstructing, Maintaining and Closing Wildland Roads.

Curving roadway at Nestucca Bay NWR highlights scenery and discourages high speeds (top); emergency personnel respond to an accident at Ridgefield NWR (bottom).

Alex Schwartz/USFWS

USFWS

DE-5 Consider Construction Impacts and Best Practices

Intent

Roadway construction can have major impacts to terrestrial and aquatic organisms, as well as to environmental quality. Appropriate project planning, project management and construction management should be applied to ensure that impacts from construction activities are minimized and acceptable. The overall project footprint should be minimized as much as possible, especially with regard to construction activities such as staging materials and equipment.

Principles

- Consider appropriate season for construction
- Minimize construction impacts to terrestrial and aquatic organisms
- Implement construction best practices, such as dust and erosion control
- Look for staging opportunities that use existing developed sites and minimize impact to adjacent habitat areas
- Consider impacts of construction needs, such as water, on the surrounding environment
- Consider how construction elements, such as water wells, could be used for staff and visitor services in the future

Metrics

- Changes in population counts or behavior (e.g. breeding) of local organisms
- Visible signs of disturbance beyond limits of work
- Compliance with erosion control plan elements

Resources

Handbook with design guidance on appropriate construction techniques for low traffic volume roads.

Weaver, William and Danny Hagans. 1994. Handbook for Forest and Ranch Roads: A Guide for Planning, Designing, Constructing, Reconstructing, Maintaining and Closing Wildland Roads.

Good checklist for items to address or consider.

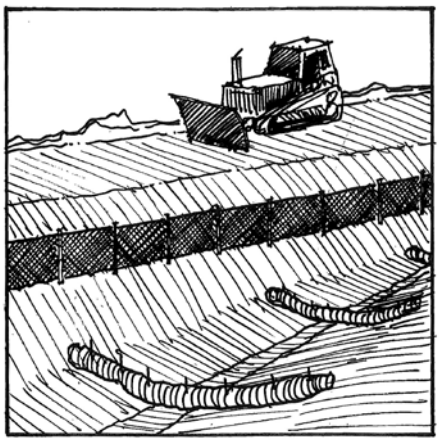
ODOT. 2006. Roadside Development Design Manual - Guidelines for Visual Resource Management, Landscaping, and Hardscaping (DRAFT).

Guidelines with resources on environmentally-friendly construction practices.

University of Washington and CH2MHill. 2009. Greenroads Rating System, v1.0. http://www.greenroads.us/.

New technology to minimize pile-driving construction impacts to aquatic organisms.

Reyff, James. 2009. Reducing Underwater Sounds with Air Bubble Curtains.



Standard practices such as using silt fencing help reduce construction impacts to adjacent habitat.

Construction on an entry road, parking lot, and trailhead project at Steigerwald NWR, in partnership with FHWA's Federal Lands Highways program. Project required extensive multidisciplinary planning, design, and construction expertise to ensure implementation of best construction practices and minimization of habitat and scenic area disturbance.

FHWA

BMPs: Best Management Practices

Best management practices are methods that have been determined to be the most effective and practical means of preventing or reducing a project's short- and long-term environmental impacts. BMPs focus on prescriptive measures, typically in the construction and maintenance phases of a project. Design Guidelines are more general and require interpretation and adaptation.

BMPs available for roadway construction projects include:

- Erosion control
- Equipment and operation
- Noise and emissions
- Spill and Pollution Prevention
- Safety

DE-6 Consider Range and Sources of Materials for Sustainable Construction

Intent

There are numerous options available for materials that have sustainable characteristics. Consider selecting materials with lower embodied energy and carbon footprints, recycled content, high durability, and which have a high level of environmental performance. Using sustainable materials can achieve compliance with the Service's environmental and performance goals, as well as save money in the long term. Even existing roadway materials can be effectively recycled into a new project, including asphalt, aggregates and fill material.

Principles

- Identify range of materials that would be suitable or possible to use in a given project
- Consider various qualities of material options, including environmental performance, longevity, maintenance needs and aesthetic fit
- Study past performance and success of materials in other sites (case studies)
- Consider using materials that are certified for sustainability
- Consider paying more for a more durable material that may save money (through performance and maintenance) in the long run
- Source materials locally where possible

Metrics

- Embodied energy calculations
- Runoff discharge rates

Resources

See materials listed in Greenroads Guidelines.

University of Washington and CH2MHill. 2009. Greenroads Rating System, v1.0. http://www.greenroads.us/.

Check on embodied energy of proposed materials at University of Bath's Inventory of Carbon & Energy (ICE) Wiki.

See: http://wiki.bath.ac.uk/display/ICE/Home+Page.

The Sustainable Sites Initiative (SSI) provides resources and guidelines for materials and site development.

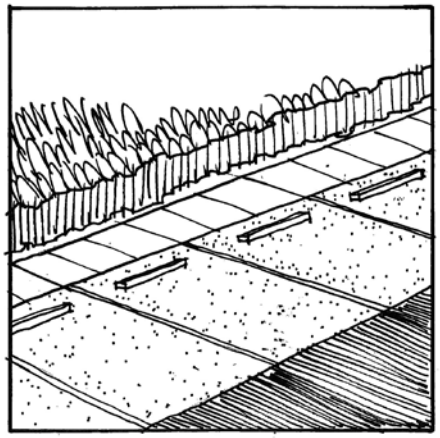
See: http://www.sustainablesites.org/.

For sites that include buildings, calculate the project's carbon footprint at BuildCarbonNeutral.

See: http://buildcarbonneutral.org.

Information and data on sustainable materials.

Calkins, Meg. 2009. Materials for Sustainable Sites.



Materials may vary for travel lanes, parking stalls and pedestrian pathways.

A parking lot at Tualatin River NWR used warm mix asphalt for main travel ways, pervious pavers in parking stalls and features a bioswale with amended soils and native plants to cleanse stormwater in order to protect habitat (top); local and sustainable materials were used to construct an Auto Tour pullout / wildlife viewing area at Modoc NWR (bottom).

Brain Bainson

Steve Clay/USFWS

Embodied Energy and Carbon Footprints

Embodied energy is generally defined as the energy (commercial and industrial) that was used to make a product. It generally includes the energy used to deliver the product to its point of use or consumption, and may also include any energy needed for the deconstruction and disposal of the product. It is commonly measured in megajoules of energy per kilogram of product (MJ/kg).

A carbon footprint is a similar metric, which measures the total amount of greenhouse gas emissions caused by a product. It is often expressed in terms of tons of CO_2 produced per kilogram of product (tCO_2/kg).

DE-7 Consider Maintenance

Intent

When planning a new roadway or retrofits to existing facilities, it is important to anticipate both short- and long-term maintenance needs. During the design phase, consider whether anticipated maintenance of potential designs is realistic, given existing or likely future budgets, staff training and skills, and other related factors. To be successful in their purpose, new types of materials (e.g. pervious paving) or facilities (e.g. wildlife underpasses or signals) may have new maintenance needs requiring staff training. Consider also that regular maintenance practices can extend the life of a facility. Weigh the pros and cons of potentially higher first costs with the benefit of lower life cycle maintenance costs for durable projects.

Consider trade-offs between longevity and maintenance needs.

Principles

- Examine current maintenance budgets, responsibilities and staff availability in concert with partners
- Estimate increase or reduction of maintenance needs for new facilities
- Consider current skills of maintenance staff and what types of training may be needed
- Consider whether contractors would be required to complete maintenance activities
- Be aware of concerns about adopting new practices, and be prepared to understand and address the concerns of operations and maintenance staff
- Provide achievable and responsive BMPs
- Discuss early in project who is responsible for repairs and maintenance to wildlife-specific facilities such as fencing
- Consider maintenance partnerships with State and County Transportation Dept's to leverage their transportation resources and expertise
- Consider the impacts of chemicals or other products that are used in roadway maintenance

Metrics

- Historic vs. current maintenance costs
- Road closure data
- BMPs correctly applied in field

Resources

Handbook with design guidance on construction and maintenance techniques for low traffic volume roads.

Weaver, William and Danny Hagans. 1994. Handbook for Forest and Ranch Roads: A Guide for Planning, Designing, Constructing, Reconstructing, Maintaining and Closing Wildland Roads.

Good checklist for items to address or consider.

ODOT. 2006. Roadside Development Design Manual - Guidelines for Visual Resource Management, Landscaping, and Hardscaping (DRAFT).

Gravel roads maintenance & design.

Skorseth and Selim. 2000. Gravel Roads Maintenance and Design Manual. South Dakota Local Transportation Assistance Program (USDOT - FHWA).

BMPs for rural road maintenance.

Smith, Stacy (Idaho Technology Transfer Center, Univ. of Idaho). 2005. BMP Handbook: Best Management Practices for Idaho Rural Road Maintenance.

Roadside vegetation management.

WSDOT. 1997. Integrated Vegetation Management for Roadsides.

Maintenance guidelines for sensitive areas.

Crane, Bill. 2006. Road Maintenance with Threatened, Endangered, or Sensitive Plants: Finding Solutions.

Maintenance guidelines.

Ruiz, Leo. 2005. Guidelines for Road Maintenance Levels.

Fire being used for maintenance of roadside vegetation

USFWS

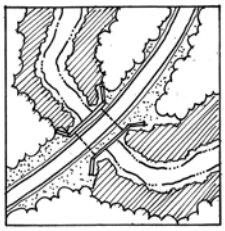
Organism Passage

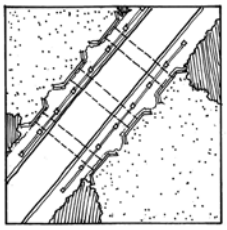
Organism Passage
Overview

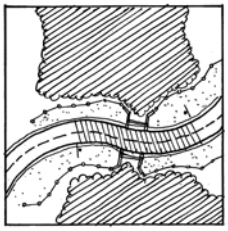
Terrestrial and Aquatic Passage
The conservation of fish, wildlife, plants and their habitats is the primary FWS mission. Roadways have major impacts on terrestrial and aquatic organisms. Roadways create barriers to wildlife movement and fragment habitat. Ensuring that organisms are able to safely move across (either over or under) roadways to meet basic life requisites is imperative to meeting the Service's mission.

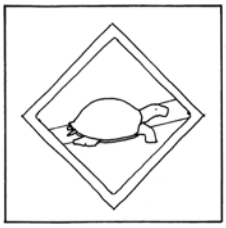
This section is intended to help direct you to guidance and resources for improving terrestrial and aquatic organism passage. The guidelines in this section reflect the growing body of science that documents the need for wildlife-sensitive planning, design, engineering, and construction of roadways. Recognizing the highly site- and species-specific nature of aquatic and terrestrial passage issues, you are particularly encouraged to seek out resources on regionally-appropriate techniques to facilitate passage of terrestrial and aquatic organisms. In areas where ESA listed species or critical habitat may benefit from a passage improvement, additional conservation measures may be warranted during both the design and construction phases.

Addressing organism passage issues on FWS managed lands is an emerging priority for the Service which these guidelines are intended to support. At present, addressing organism passage issues on FWS lands is most realistic in conjunction with high priority infrastructure projects such as bridge replacements. A future possibility is that projects intended to specifically address organism passage will be eligible for Refuge Roads funding.









OP-1 Develop Your Corridor Plan for Crossing

Intent

It is important to develop a comprehensive plan to address aquatic and terrestrial connectivity along a roadway. Corridor level plans are necessary to document habitat fragmentation, lack of stream continuity, population level roadway avoidance effects and wildlife-vehicle collisions (WVC). In addition to identifying the ecological impacts a roadway is having on organisms, plans should identify funding opportunities and partnerships in support of recommended mitigation measures. Successful plans identify target species and crossing "hot spots". Prioritize your specific individual crossing projects and include conceptual design documentation for crossing structures and supporting mitigation measures.

Principles

- Develop organizational partnerships
- Solicit expert review and input; wildlife crossing structures require expert design and review
- Monitor to locate roadkill hotspots but consider how roads change animal movements (avoidance)
- Identify target species based on management objectives
- Consider how crossing needs align with other transportation priorities and budgets
- Consider species' home range size and seasonal movements to determine extent of passage needed
- Consider how current or future roadway design speed and traffic volumes may impact wildlife

Metrics

- Safety (animal/vehicle collision reductions)
- Species population health
- Dispersal capability
- Daily/seasonal movement necessary to meet life requisites

Resources

Latest information on road ecology as it relates to mitigating interactions between roads and wildlife.

Beckmann, J. P., A. P. Clevenger, M. P. Huijser, and J. A. Hilty. 2010. Safe Passages.

Coordinating aquatic and terrestrial passage opportunities.

Jacobson et al. 2007. Combining Aquatic and Terrestrial Passage Design into a Continuous Discipline.

Effectiveness of various wildlife crossing facilities.

Transportation Research Board of The National Academies. 2008. Evaluation and the Use and Effectiveness of Wildlife Crossings (NCHRP Report 615).

Best practices for reduction of WVC.

FHWA. 2008. Wildlife-Vehicle Collision Reduction Study, Best Practices Manual. Access at http://www.fhwa.dot.gov/environment/hconnect/wvc/index.htm.

Guidance on reduction of WVC.

FHWA. 2008. Wildlife-Vehicle Collision Reduction Study, Report to Congress. Access at http://www.fhwa.dot.gov/publications/research/safety/08034/index.cfm.

Effects of roadways on wildlife (see entire Conservation Biology issue).

Trombulak, Stephen and C. Frissell. 2000. Review of Ecological Effects of Roads on Terrestrial and Aquatic Communities.

Background research on roadway impacts to wildlife.

Mader, Sharon. 2006. Comparing the Ecological Effects of Linear Developments on Terrestrial Mammals.

See list of crossing issues by state, by FWS national Refuge Roads Coordinator (unpublished).

Wildlife Crossing and Aquatic Organism Passage Issues by State.

Examine the roadway corridor for locations where organisms would prefer to cross in the absence of a roadway. Study topography, vegetation patterns and hydrology along the corridor.

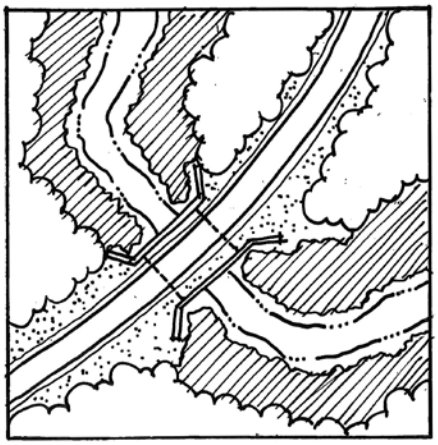
A corridor management and wildlife crossing plan is a critical tool to plan and fund projects; map showing monitoring locations for crossing plan study (below).

Robert Henke et al.

OP-2 Provide and Enhance Aquatic Organism Crossings

Intent

Roads, streams and rivers are similar systems in that they all transport material and organisms across the landscape in a linear fashion. Stream and river functions, such as the movement of woody debris, sediment transport and fish and wildlife passage have historically been impeded by engineering solutions intended to minimize disruptions to roadway infrastructure. Recognizing the importance of aquatic resources on FWS managed lands, an ecosystem-based approach to aquatic organism passage focuses on maintaining the continuity of a stream or river's characteristics where that system intersects a roadway.



Locate aquatic crossings to minimize interruption to normal stream flow and channel migration.

Principles

- Consider and design for long-range traffic volume projections for road
- Consider seasonality of wildlife movement and stream flows
- Develop list of target species for aquatic organism passage and focus planning and design efforts on supporting overall ecosystem health
- Consider range of stream crossing solutions and techniques
- Culverts or bridges that mimic the slope, structure and dimensions of the natural stream bed can allow aquatic species to freely move under roadways
- Plan for appropriate post-construction riparian and streambed restoration work
- Consider maintenance needs for various stream crossing designs
- Plan for appropriate in-water work windows
- Consider how to best complete road maintenance activities at or near stream crossings in order to avoid impacts to water quality

Metrics

- Surveys to show healthy passage of aquatic organisms
- Water quality measurements (upstream vs. downstream)
- Re-colonization of upstream habitat by aquatic organisms (in cases of improving/upgrading existing crossings)

Resources

Analysis & costs of culvert design and aquatic organism passage.

MN Dept. of Transportation. 2009. Cost Analysis of Alternative Culvert Installation Practices in Minnesota.

Design guidelines and best practices for aquatic organism passage.

USDA Forest Service. 2008. Stream Simulation: An Ecological Approach to Providing Passage for Aquatic Organisms at Road-Stream Crossings.

Bridge construction guidance.

AZ Game and Fish Dept., Habitat Branch. 2008. Guidelines for Bridge Construction or Maintenance to Accommodate Fish & Wildlife Movement and Passage.

Riparian restoration guidance.

USDA Forest Service. 2002. Management Techniques for Riparian Restorations (Roads Field Guide, Volume II).

Design guidelines for stream crossings and proper road drainage.

William Weaver and Danny Hagans. 1994. Handbook for Forest and Ranch Roads: A Guide for Planning, Designing, Constructing, Reconstructing, Maintaining and Closing Wildland Roads.

See list of crossing issues by state, by FWS national Refuge Roads Coordinator (unpublished).

Wildlife Crossing and Aquatic Organism Passage Issues by State.

See aquatic organism passage in:

Proceedings of International Conference on Ecology and Transportation (ICOET). Access online at: http://www.icoet.net/.

Site visit to a new aquatic crossing structure during a Refuge Roads coordination meeting at Kenai NWR (top); viability for many aquatic species, such as salmon, depend on their ability to move through river and stream ecosystems (bottom).

John Sauer/USFWS

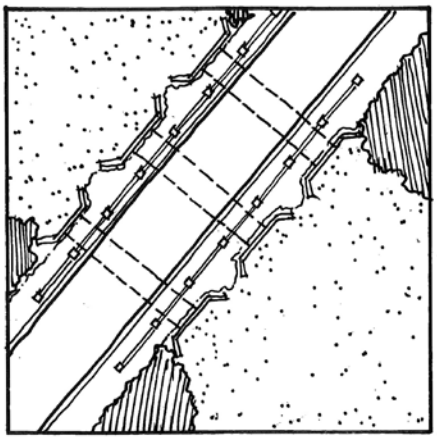
Florian Schulz

OP-3 Provide and Enhance Terrestrial Wildlife Crossings

Intent

Roadways are a significant barrier and danger for terrestrial organisms. When terrestrial organisms attempt to cross roadways in order to meet life requisites, fatalities and injuries can result for both wildlife and humans. If wildlife-vehicle collisions (WVC) regularly take place along a roadway, this is a good indicator of the need for mitigation. Another less visible effect of habitat fragmentation caused by roadways is avoidance behaviors that can have significant effects on populations.

The most effective mitigation measure to reduce WVC and to enhance terrestrial organism passage across roadways is to design and construct suitable crossing structures, in combination with barrier and diversion fencing, where appropriate. It is important to remember that every species is impacted by roadways in different ways. Terrestrial crossing projects can seek to meet multiple ecosystem connectivity objectives simultaneously.



Terrestrial wildlife crossings provide safer crossings for wildlife and connect fragmented habitat patches.

Principles

- Identify design species and their crossing structure needs; design crossings that work for as many species as possible
- Consider and design for long-range traffic volume projections for roadway
- Consider visual quality and aesthetic impact of structures
- Improve nearby habitat for wildlife, especially areas leading to or connecting with crossings
- Maximize opportunity for restoration project links to crossing/connectivity sites
- Consider "right crossing, right place" when locating crossings
- Review the corridor management or crossing plan
- Bridge replacements are the best opportunity in a 50-70 year time frame to create movement opportunities and should be taken advantage of even if no other projects are in the area

Metrics

- Evidence of unmet need to cross
- Improved wildlife counts in adjacent areas after crossing implementation
- Improved wildlife dispersal rates
- Reduction in WVC

Resources

Bridge construction guidance.

AZ Game and Fish Dept., Habitat Branch. 2008. Guidelines for Bridge Construction or Maintenance to Accommodate Fish & Wildlife Movement and Passage.

Wildlife crossing structures and fencing effectiveness evaluation.

Hardy et al, Western Transportation Institute. 2007. Evaluation of Wildlife Crossing Structures and Fencing US Hwy 93 Evaro to Polson.

Effectiveness of various wildlife crossing types.

Transportation Research Board of The National Academies. 2008. Evaluation and the Use and Effectiveness of Wildlife Crossings.

Best practices for WVC reduction.

FHWA. 2008. Wildlife-Vehicle Collision Reduction Study, Best Practices Manual.

Guidance on reduction of WVC.

FHWA. 2008. Wildlife-Vehicle Collision Reduction Study, Report to Congress.

See FWS Refuge Roads Coordinator list of crossing issues by state (unpublished).

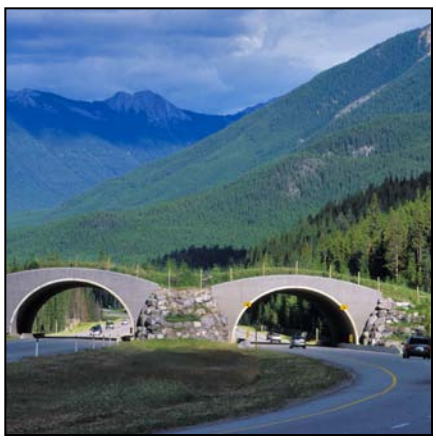
Wildlife Crossing and Aquatic Organism Passage Issues by State.

See crossing structure design in:

Proceedings of International Conference on Ecology and Transportation (ICOET). Access online at: http://www.icoet.net/.

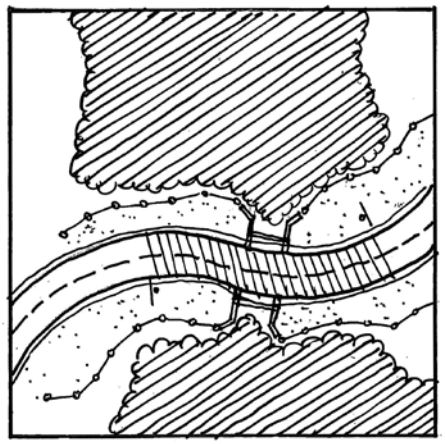
Bridge replacements are excellent opportunities to enhance terrestrial crossing opportunities (top); a wildlife overcrossing in Banff NP, Canada has successfully improved both safety and wildlife movement (bottom).

Brian Bainson



Florian Schulz

OP-4 Evaluate Need for Wildlife Fencing and Other Guiding Features



Fencing can help guide wildlife to safer crossing areas.

Intent

Wildlife-vehicle collisions (WVC) can be reduced through the use of barrier and diversion fencing or other features that help guide wildlife to crossing structures, including overpasses or underpasses. Effective wildlife barrier and diversion fencing forces animals off the road and into a crossing structure. In order for a crossing structure to be effective, it needs to be designed in conjunction with fencing. Project teams should consider aesthetics, where to end fencing and how fencing relates to topographical features in the landscape. Fencing design is highly species-specific and should be designed in consultation with an expert.

Barrier and diversion fencing requires maintenance. Successful projects account for maintenance concerns and budgets during the design phase. Fencing discussions might include a consideration of how to handle fence ends. Where to end a fence has major safety implications. It is a difficult decision, and is best done in consultation with an expert.

Principles

- Study WVC or other interactions along the corridor
- Recognize that fencing is a last resort option, and that the outcomes can be deadly for wildlife inadvertently trapped on a roadway
- Design fencing treatments based on species and environmental conditions
- Include escape structures in the design; jumpouts are more effective than the commonly used one-way gates
- To avoid "end run" WVC, end fencing beyond prime habitat areas *or* at locations with good visibility
- Boulder piles can act as a maintenance-free fence for ungulates
- Consider how best to accommodate multiple species
- Consider the aesthetic impacts of wildlife fencing
- Consider how to handle fencing at access roads

Metrics

- WVC counts
- Reduction in wildlife mortality due to WVC

Resources

BMPs for reduction of WVC.

FHWA. 2008. Best Practices Manual, Wildlife Vehicle Collision Reduction Study (Report to Congress). Found at http://www.fhwa.dot.gov/environment/hconnect/wvc/index.htm.

Wildlife crossing structures and fencing effectiveness evaluation.

Hardy et al, Western Transportation Institute. 2007. Evaluation of Wildlife Crossing Structures and Fencing on US Hwy 93 Evaro to Polson.

Effectiveness of various wildlife crossing types.

Transportation Research Board of The National Academies. 2008. Evaluation and the Use and Effectiveness of Wildlife Crossings (NCHRP Report 615).

Website with additional guidelines and case studies of construction and maintenance practices to benefit wildlife along roadways.

FHWA - Keeping It Simple: Easy Ways to Help Wildlife Along Roads. See: http://www.fhwa.dot.gov/environment/wildlifeprotection/index.cfm.

Continuous page wire fencing is commonly used to keep wildlife off roads and to direct them to crossing structures (top); jumpouts are essential features to allow trapped animals to leave the road whenever continuous fencing is used (bottom).

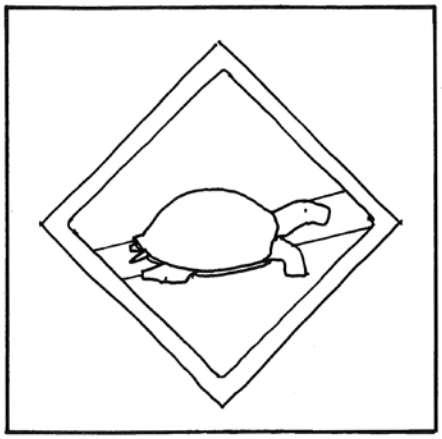
lisahends/Flickr.com

USFWS

OP-5 Consider Warning and Safety Systems for Drivers

Intent

An important component of facilitating terrestrial organism passage is promoting adequate awareness and caution on the part of drivers. Various systems exist to warn drivers of the presence of wildlife on a roadway. These systems include static signs to alert drivers to zones where wildlife typically cross roadways as well as flashing lights or other signals that respond to the presence of wildlife near the roadway. The most effective signage systems are active warning systems. Static warning signs, if strategically placed and well designed, can improve public awareness and may be a good fit for low volume roads.



Warning signs can help remind drivers to look out for wildlife on the road.

Principles

- Select the appropriate type of signage for the species, roadway LOS and site conditions
- Provide public information on the crossing design and intent
- Consider active warning systems for "end runs" of fencing, crossing hot spots and as temporary mitigation measures in the absence of crossing structures
- Consider the related benefits of communicating crossing and habitat areas, such as public education and communicating stewardship

Metrics

- Wildlife-vehicle collision (WVC) statistics (note that these are a better measure of safety than ecological conditions; even then, they are suspect unless expertly interpreted)

Resources

BMPs for reduction of WVC.

FHWA. 2008. Best Practices Manual, Wildlife Vehicle Collision Reduction Study (Report to Congress). Found at http://www.fhwa.dot.gov/environment/hconnect/wvc/index.htm.

Wildlife crossing structures and fencing effectiveness evaluation.

Hardy et al, Western Transportation Institute. 2007. Evaluation of Wildlife Crossing Structures and Fencing on US Hwy 93 Evaro to Polson.

Research on effectiveness of methods for collision reduction.

Huijser et al, and Salsman and Wilson. 2006. Animal Vehicle Crash Mitigation Using Advanced Technology, Phase I: Review, Design And Implementation, SPR-3(076).

In areas where wildlife is known to cross roadways, active warning systems can be effective to alert drivers to the presence of wildlife on or near a roadway.

Florian Schulz

Stormwater Management

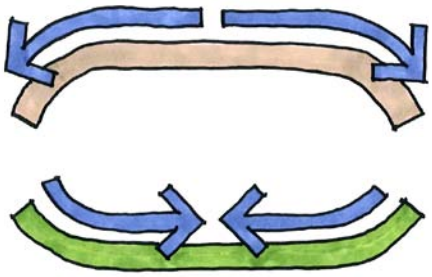
Stormwater Management
Overview

Cleaning Water, Improving Habitat
It is important to consider what happens to stormwater runoff along the entire roadway. Runoff from roadways on FWS managed lands may deliver chemical pollutants and sediment to surface and ground water. Roadways have a profound effect on the hydrology of a given site and watershed. Impervious surfaces increase runoff rates, volumes, temperature and duration. Roadway surfaces can concentrate flows, creating unnatural flow regimes that impact adjacent lands and lead to cumulative impacts downstream at the watershed scale, such as erosion and flooding.

This section discusses sustainable stormwater management techniques and points you to educational resources and guidelines on their design, construction and maintenance. Such techniques can help to clean stormwater runoff from roadways, filtering out particulates and other pollutants. They can also slow flows and detain water during peak storm events, restoring more natural flows to adjacent water bodies. A common term used to describe this approach to stormwater management is low impact development (LID). LID emphasizes conservation and the use of existing natural site features, integrated with distributed, small-scale stormwater controls to more closely mimic natural hydrologic patterns.

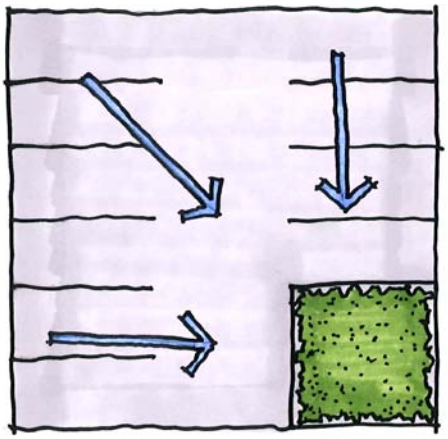
LID techniques include various features known collectively as natural drainage systems (NDS). These rely mainly on plantings, amended soils and other natural materials to treat, detain and retain stormwater runoff; these are often referred to as bioretention. Bioretention features include bioswales and rain gardens. Areas dedicated to NDS serve to buffer high value habitat from ecological disturbances caused by roadway infrastructure. Natural drainage features may also provide screening or visual buffering—functions that are often desirable when separating uses on a site or landscape.

NDS should be designed and implemented with care, so as to be compatible with habitat management goals. Concerns about their use include drawing wildlife closer to roadways through habitat creation (potentially causing increased negative animal-vehicle interactions), and the possibility of concentrating roadway pollutants into specific areas at levels that may be harmful to wildlife. These are important concerns to address, and care should be taken that each facility is designed to meet site-specific concerns.

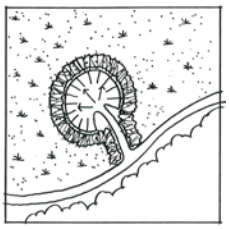


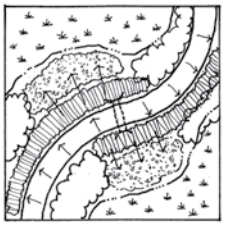
Typical facilities disperse runoff without treatment (top), while an LID approach detains and cleans water on site (bottom)

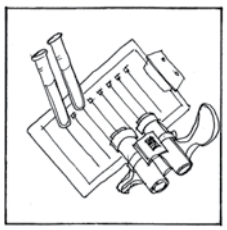
LID Philosophy
LID asks us to nurture stormwater rather than dispose of it. NDS features van help to achieve this.

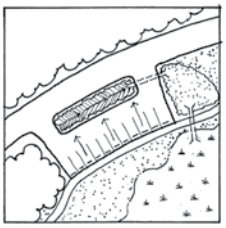


Typical NDS Sizing
An NDS feature such as a bioretention area typically requires an area of only 10% of the impervious area it is designed to treat.









SM-1 Buffer Habitat from Polluted Runoff

Intent

Runoff from roadways can carry unwanted pollutants into adjacent streams and water bodies. It can also adversely affect (increase) the temperature of receiving water bodies. Methods for reducing pollution (chemical, particulate and temperature) should be considered and used to minimize or eliminate water quality issues roadway runoff. Treatment facilities in the right-of-way can also serve to intercept and improve the quality of runoff water from other nearby sources.

Principles

- Adhere to a low impact development (LID) strategy in planning and designing repairs and improvements
- Consider natural drainage system (NDS) treatment facilities, including filter strips and bioswales
- Stormwater treatment facilities and approach need to be site-specific
- Consider appropriate NDS features for the type of roadway—parking, auto tour route, entry/access road, highway, etc.
- Look at hydrology planning in the area and be aware of roadway impacts on it

Metrics

- Water quality testing
- Temperature monitoring

Resources

Design guidelines for LID features.

US Dept. of Defense. 2004. Unified Facilities Criteria (UFC) - Design: Low Impact Development.

LID guidelines for Pacific NW.

Hinman, Curtis. 2005. Low Impact Development: Technical Guidance Manual for Puget Sound. Puget Sound Action Team. Access at: http://www.psparchives.com/publications/our_work/stormwater/lid/lid_tech_manual05/LID_manual2005.pdf.

Buffer design guidelines for that include stormwater treatment.

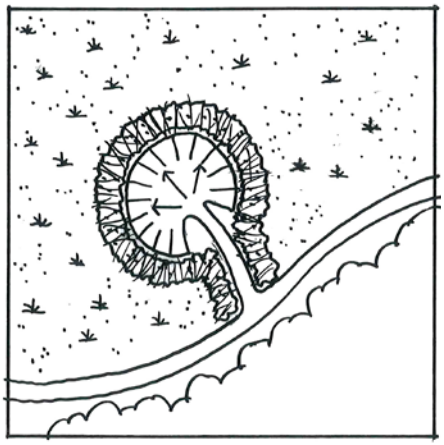
Bentrup, G. 2008. Conservation buffers: design guidelines for buffers, corridors, and greenways. Gen. Tech. Rep. SRS-109. Access at: http://www.unl.edu/nac/bufferguidelines/.

Roadway design guidance for lower impact to hydrology.

Dashiell and Lancaster. Undated. Road Design Guidelines for Low Impact to Hydrology. Five Counties Salmonid Conservation Program.

White paper on integrated LID and ecological analysis.

Mensing and Chapman. Undated. Conservation Development and Ecological Stormwater Management: An Ecological Systems Approach.



NDS features receive, clean and detain or retain runoff from roadways and other impervious surfaces; they can buffer habitat areas from negative ecological impacts.

Parking lot runoff at McNary NWR drains to a central bioswale that treats polluted runoff and buffers habitat from roadway impacts.

Brian Bainsson

Water Quality 101 **Issue: Stormwater runoff from roads and parking lots is laden with pollutants**

Alex Schwartz/USFWS

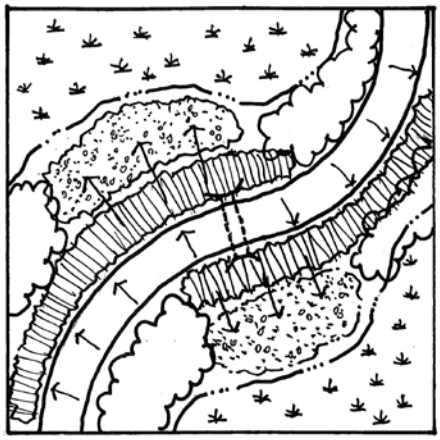
- Conventional facilities collect and drain polluted runoff using a variety of methods, such as sheet draining, "grassy swales," curbs and drainage inlets. These can quickly convey pollutants directly to sensitive habitats before the pollutants can be filtered out (*left*).
- Improved facilities are designed to intercept and filter polluted runoff before discharge to sensitive habitats (*right*).

SvR Design

SM-2 Protect Habitat from Erosive Flows and Flooding

Intent

The rate of flow of runoff from roadways is major issue of concern. Flow rates are typically much higher and shorter in duration than those which would come from the same areas in unpaved conditions. Such spikes in flow rates create erosion and flooding issues and prevent groundwater recharge. These effects can have major detrimental impacts on fish, wildlife and their habitats. Natural drainage system (NDS) facilities should be designed to not only clean water, but to detain peak flows and, where appropriate retain, runoff locally. Target flow control should be based on undeveloped conditions for local ecosystems, as well as current soil conditions and downstream concerns.



NDS features can detain runoff, slowing its flow to adjacent water bodies.

Principles

- Minimize quantity of stormwater runoff
- Minimize use of impervious materials
- Technologies to address water quantity issues include wet ponds, porous pavements, bioswales and rain gardens
- Improvements (stormwater facilities) must be sized appropriately to handle flow

Metrics

- Measurements of stormwater runoff rates and volumes
- Hydrographs for receiving water bodies

Resources

Design guidelines for low-use roads, focusing largely on hydrology.

Weaver, William and Danny Hagans. 1994. Handbook for Forest and Ranch Roads: A Guide for Planning, Designing, Constructing, Reconstructing, Maintaining and Closing Wildland Roads.

Low impact development (LID) guidelines for Pacific Northwest.

Hinman, Curtis. 2005. Low Impact Development: Technical Guidance Manual for Puget Sound. Puget Sound Action Team. Olympia, WA.

Design guidelines for LID features.

US Dept. of Defense. 2004. Unified Facilities Criteria (UFC) - Design: Low Impact Development.

Info on vegetative filter strips (page 44) and other practices.

Smith, Stacy (Idaho Technology Transfer Center, Univ. of Idaho). 2005. BMP Handbook: Best Management Practices for Idaho Rural Road Maintenance.

Roadway design guidance for lower impact to hydrology.

Dashiell and Lancaster. Undated. Road Design Guidelines for Low Impact to Hydrology. Five Counties Salmonid Conservation Program.

BMPs for ESA compliance.

WSDOT. Best Management Practices Field Guide for ESA Sec 4(d) Habitat Protection.

A gravel parking lot with central vegetative swale at Ash Meadows NWR minimizes impervious materials and allows for large storm events to be infiltrated on site, away from more sensitive habitats.

Jeff Holm/USFWS

Water Quantity 101 **Issue: Impervious surfaces increase runoff rates, temperature, and volume**

SvR Design

- Runoff from impervious areas often concentrates flows, which impacts adjacent lands and also leads to cumulative downstream and watershed-scale impacts
- Where space is limited or linear alignment is tight, choose materials such as pervious paving (*left*) to reduce runoff rates
- Use NDS features to detain runoff before discharge (*right*)

SvR Design

SM-3 Monitor and Maintain Stormwater Facilities

Intent

Monitoring and maintaining stormwater facilities after project construction is key to learning from your work and improving the effectiveness of future projects. Particular attention should be given to monitoring the effects of the project on the landscape's environmental quality. Budgeting for and following standard monitoring and maintenance protocols are a critical component for stormwater management on FWS managed lands.

Principles

- Employ stormwater facility monitoring protocols (per ASCE or other standards)
- Maintain facilities in a manner that optimizes facility performance
- Collect relevant baseline data before project construction
- Check for and use appropriate control measures on any invasive species
- Check for levels of contaminants coming from roadway, and track their fate in areas adjacent to roadway
- Monitor level of compatibility with local wildlife and surrounding habitats
- Document maintenance needs and costs
- Document effectiveness of soil mixes and plants used
- Share or publish monitoring results to help improve design and results in other projects
- Use monitoring results in adaptive management

Metrics

- Measurements of stormwater runoff rates, volumes, temperature and contaminants
- Hydrographs for receiving water bodies
- Analysis documenting water quality improvements due to NDS features

Resources

Technical guidelines for monitoring of stormwater in various conditions.

US EPA. 2002. Urban Stormwater BMP Performance Monitoring. Access at: http://water.epa.gov/scitech/wastetech/guide/stormwater/monitor.cfm.

NDS maintenance guidelines that include guidance on monitoring.

City of Bellevue, WA. 2009. Natural Drainage Practices Maintenance Guidelines. Access at: http://www.bellevuewa.gov/pdf/Utilities/Natural_Drainage_Practices.pdf.

Study from UC Davis & USFS finding that bioswale significantly reduced runoff and removed pollutants; includes monitoring protocols used.

Xiao, Qingfu and E. G. McPherson. 2009. Testing a Bioswale to Treat and Reduce Parking Lot Runoff. Access at: http://www.fs.fed.us/psw/programs/cufr/products/psw_cufr761_P47ReportLRes_AC.pdf.

Standard operating procedures for stormwater monitoring.

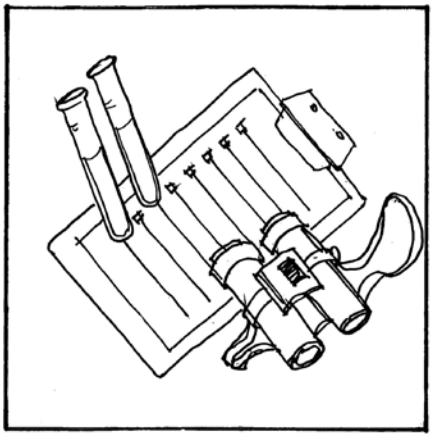
Washington Department of Ecology. 2010. Stormwater monitoring resources. Access at: http://www.ecy.wa.gov/programs/wq/stormwater/municipal/strmH2Omonitoring.html.

Guidance on stormwater monitoring for construction sites.

Washington Department of Ecology. 2006. How to do Stormwater Monitoring: A guide for construction sites. Access at: http://www.ecy.wa.gov/biblio/0610020.html.

Monitoring for larger debris.

ASCE. 2010. Guideline for Monitoring Stormwater Gross Solids. Order at: http://www.asce.org/Product.aspx?id=2147485997.



Monitoring projects will help advance the development of a focused approach to stormwater management on FWS managed lands that is responsive to the Service's mission.

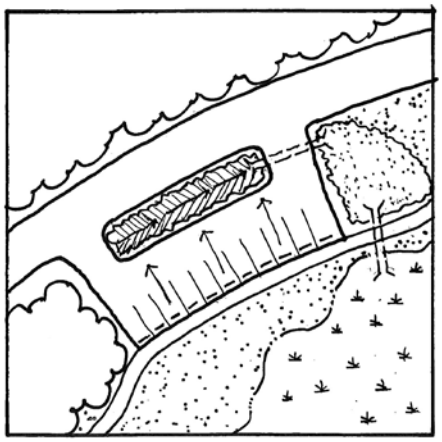
Similar to managed wetlands, stormwater facilities should be periodically monitored for performance and to inform adaptive management and maintenance regimes.

USFWS

SM-4 Promote Stewardship of Aquatic Resources

Intent

Low impact development (LID) facilities for stormwater management serve the functional purposes of cleaning and slowing or retaining stormwater runoff and protecting our aquatic resources. Additionally they can help to raise public awareness and understanding of the relationship of roadways to aquatic resources, wildlife and habitat conservation. Stormwater facilities can be designed to reveal to and educate visitors about the impacts of development on aquatic resources. Facilities can communicate how they protect aquatic resources, and can influence behavior and management practices beyond FWS managed lands in support of the Service's mission.



Stormwater treatment facilities integrated into roadways provide places where FWS stewardship of aquatic resources can be demonstrated.

Principles

- Prioritize aesthetic and educational components of highly visible stormwater management facilities
- Use stormwater facilities to communicate stewardship commitment of FWS
- Design stormwater facilities with native plants in arrangements that respond to multiple objectives, including management, educational/ interpretive, aesthetic and maintenance goals
- Make stormwater part of the site's interpretive story and reveal the process of stormwater quantity and quality controls to the extent possible
- Consider educational and volunteer opportunities presented by stormwater management facilities
- Consider potential benefits or drawbacks of additional wetland habitat areas created by natural drainage facilities

Metrics

- "Friends" groups involvement & awareness
- Production/use of interpretive materials or content
- Use of stormwater facilities as positive examples or success stories (e.g. in public media, professional circles, within FWS)

Resources

Social benefits of road and highway systems.

AASHTO. 2008. Above and Beyond: The Environmental and Social Contributions of America's Highway Programs.

Promotional information for visitors to FWS sites.

USFWS. 2005. Byways to America's Wildest Places: Discover Your National Wildlife Refuges.

Scenic byways guidelines with details on benefits of good road design.

USDA Forest Service. 2002. Scenic Byways: A Design Guide for Roadside Improvements.

Green Values calculator can help to quantify benefits from LID (aka green infrastructure) facilities.

Center for Neighborhood Technology. 2010. Green Values Stormwater Management Calculator. Access at: http://greenvalues.cnt.org/

Additional resources on green infrastructure (another term that includes natural stormwater management facilities).

US EPA. 2010. Green Infrastructure: Managing Wet Weather With Green Infrastructure (website). Access at: http://cfpub.epa.gov/npdes/home.cfm?program_id=298.

Report examining social, economic, and environmental benefits of green infrastructure.

Stratus Consulting. 2009. A Triple Bottom Line Assessment of Traditional and Green Infrastructure Options for Controlling CSO Events in Philadelphia's Watersheds.

Stormwater facilities can be an important part of visitor experience, providing interpretive opportunities (top) and allowing visitors hands-on experience planting or maintaining native vegetation (bottom).

Justin Martin

USFWS

Visitor Experience

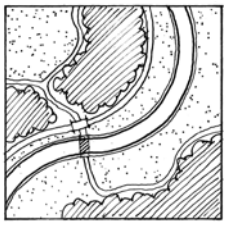
Visitor Experience
Overview

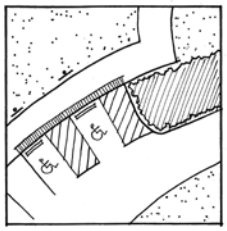
Engaging the Public

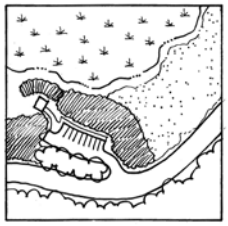
Conservation of fish, wildlife, plants and their habitats is at the core of the Service's mission. Providing public access compatible with conservation goals is paramount to achieving this mandate. Roadways are the primary infrastructure elements that facilitate public access to FWS managed lands. Conversely, landscapes without roads or limited or restricted public access on roads can support protection of sensitive habitats when necessary. This section is intended to help you consider how best to provide access to FWS managed lands. Well-designed roadways on FWS lands can help demonstrate to visitors how the Service's mission is carried out at the landscape scale.

Scenic roadways offer visitors a glimpse into the habitat areas that the Service manages, helping to inspire an ethic of stewardship and conservation among the public. Roadways should be designed to afford such experiences and to convey a sense of place that is unique to each site and destination. They should take into account both the natural and cultural histories of the land they traverse, revealing but not destroying special places and artifacts along the way. This section of the guidelines will point you to resources to help with design solutions focused on the visitor's experience. Design of roadway elements such as safety and guiding features, interpretive signs and visitor facilities should be relevant and specific to the region, if not to the individual site or refuge.

National Wildlife Refuges, Fish Hatcheries and other FWS managed lands are national treasures. Facilities there should help visitors connect with the natural heritage that the Service works to conserve.







VE-1 Preserve and Highlight Scenic Value

Intent

The scenic value of wildlife refuges plays an important role in the visitor experience. Road alignments should be chosen or revised carefully so as to preserve the scenic value of the journey. Roadway alignments and locations on FWS managed lands should afford views and simultaneously prevent roadways from becoming dominant features of the visual landscape.

Principles

- Consider designs that respond to the character of the landscape and management practices. For example, an entrance road may offer a change in design speed, scale and geometry in order to help visitors decompress from previous highway travel
- Provide appropriate orientation and directional signage in a style that fits with the local character and landscape
- Consider and plan the viewsheds and impacts of roadways on the visual and auditory landscape
- Consider and plan coherent and consistent design elements with the facility (color, texture, form)
- Consider the entry experience (does it welcome and orient visitors?) and sequence of visitor experiences when arriving at FWS managed lands or high use areas such as visitor centers
- Consider opportunities for interpreting culture and the landscape along the corridor
- Provide safe places, such as overlooks and viewpoints, to enjoy scenery

Metrics

- Visual resource analysis/ management - USFS or BLM methodologies (see Resources below)

Resources

Scenic byways guidelines with details on benefits of good road design.

USDA Forest Service. 2002. Scenic Byways: A Design Guide for Roadside Improvements.

Study on context sensitive roadway design from New Mexico.

New Mexico Department of Transportation. 2006. Architectural and Visual Quality Design Guidelines for Context Sensitive Design and Context Sensitive Solutions.

Roadside treatment design guidelines.

FHWA. 2008. Safe and Aesthetic Design of Urban Roadside Treatments.

Regional guidelines for roadside development.

ODOT. 2006. Roadside Development Design Manual - Guidelines for Visual Resource Management, Landscaping, and Hardscaping (DRAFT).

Design guidance based on human behavior patterns.

Transportation Research Board of The National Academies. 2008. Human Factors Guidelines for Road Systems (NCHRP Report 600B).

USFS visual assessment technique.

USDA Forest Service. 1995 (rev. 2000). Landscape Aesthetics: A Handbook for Scenery Management. AH-701.

BLM visual assessment technique.

BLM. 2007. Visual Resource Management (website). Access at http://www.blm.gov/nstc/VRM/.

Plan roadways to afford views to areas of high scenic value.

Roadways provide or give access to scenic vistas (top) and visitor facilities such as a viewing blind at Finley NWR (bottom).

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VE-2 Promote and Facilitate Multiple Modes of Transportation

Intent

Access to FWS managed lands, where compatible with Station purpose, should be available to visitors via multiple forms of transportation, including public transit, bicycle, and walking. Alternative forms of transportation can help reduce visitors' carbon footprints, which in turn may have long term positive affects for the natural resources we manage. Planning and building to accommodate sustainable transportation options can help to achieve the FWS mission.

Principles

- Design alternative transportation facilities that are compatible with wildlife and habitat conservation
- Provide parking for bicycles and other alternative types of transportation
- Consider adding charging stations for electric vehicles
- Coordinate with other agencies or organizations that could provide public transportation to FWS managed lands
- Promote and partner to develop bicycle routes to FWS managed lands
- Consider bicycle routes through FWS managed lands where compatible with wildlife, safety, and user experience
- Consider signage or pavement markings to alert drivers to other types of road users
- Use outreach to encourage use of alternative transportation modes to and within the FWS managed lands

Metrics

- Counts of users arriving by public transportation, using bicycles, etc.
- Use rates of stationary facilities, such as special parking or bike racks

Resources

Potential funding source for transit and other alternative transportation options.

Paul S. Sarbanes Transit in Parks Program (5320). Access at: http://www.fta.dot.gov/funding/grants/grants_financing_6106.html.

Case studies for alternative transportation projects in National Parks.

See: http://www.volpe.dot.gov/nps/projects.html.

Design guidelines (see pp. 70-76).

USDA Forest Service. 2002. Scenic Byways: A Design Guide for Roadside Improvements.

Potential funding for developing alternative transportation systems for visitors through the Transit in Parks Program (5230)

See: http://www.fta.dot.gov/funding/grants/grants_financing_6106.html.

Bicycling on federal lands - case studies include two National Wildlife Refuges.

FHWA. 2008. Guide to Promoting Bicycling on Federal Lands. FHWA Pub. No. FHWA-CFL/TD-08-007.

Case studies that include alternative transportation programs in parks, such as shuttle bus systems.

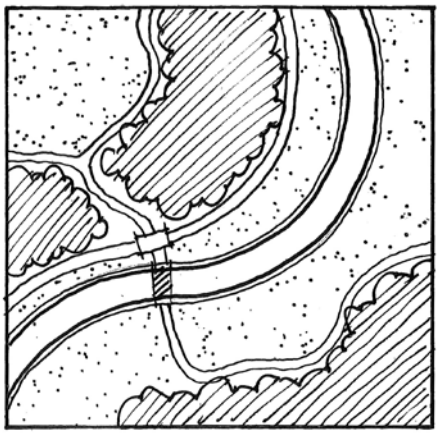
NPS Partnerships Case Studies (Transportation). See: http://www.nps.gov/partnerships/cs_type.htm#anchor19.

Lessons from Europe on traffic calming, enhancing mobility options.

Brewer, Jim, et al. 2001. Geometric Design Practices for European Roads. FHWA, Office of International Programs.

Case Study.

Tualatin River NWR. Two parking spaces designated for hybrid vehicles; bicycle racks provided at parking area; bus stop for a public transit line adjacent to the Refuge.



Providing separate facilities can encourage users who don't want to bike or walk along a roadway.

Roadway projects should facilitate multiple modes of transportation; a roadway at Ding Darling NWR (top) accommodates both autos and bikers for wildlife observation; parking lot at Great Swamp NWR visitor center (bottom) provides a safe, convenient place for bicycle parking.

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VE-3 Comply With Accessibility Standards and Guidelines

Intent
FWS managed lands should be accessible to all. FWS is subject to accessibility standards as dictated by the Architectural Barriers Act (ABA). Project teams should use the relevant suite of resources and guidance to ensure all FWS facilities are designed and constructed to comply with or exceed the mandates of the ABA.

Principles
- Define and consider visitor expectations for accessibility
- Balance safety and accessibility concerns
- Apply all relevant design criteria in order to meet or exceed the requirements of ABA
- Consider the relationship of accessible improvements to related infrastructure. Is there a completely accessible visitor experience?

Metrics
- Compliance with requirements, guidelines and standards
- Visitor use counts
- Outcomes of DCR facility audits

Resources
See ABA accessibility standards.

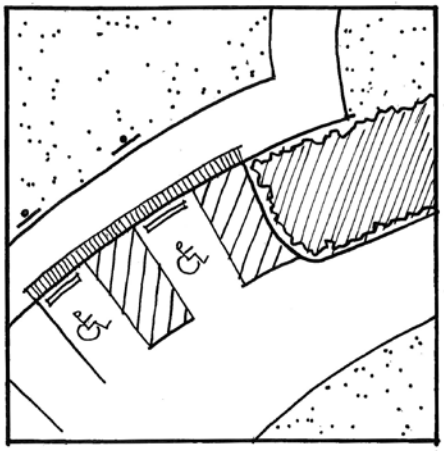
http://www.access-board.gov/gs.htm.

Draft Final Guidelines for accessibility in Outdoor Developed Areas on Federal lands:

http://www.access-board.gov/outdoor/.

Accessibility guidance for Federal outdoor areas (specific to USDA Forest Service lands/facilities).

USDA Forest Service. 2006. Accessibility Guidebook for Outdoor Recreation and Trails.



Brian Bainnson

Provide accessible parking spaces with appropriate access aisles and access to pathways (top); accessible parking at Great Swamp NWR (right).

What Federal Accessibility criteria should FWS projects follow?

The Architectural Barriers Act (ABA) of 1968
FWS is subject to the ABA. The ABA requires access to facilities designed, built, altered or leased with Federal funds. Passed by Congress in 1968, it marks one of the first efforts to ensure access to the built environment. The Access Board develops and maintains accessibility guidelines under this law. These guidelines serve as the basis for the standards used to enforce the law, the Architectural Barriers Act Accessibility Standard (ABASS).

Americans with Disabilities Act and the Architectural Barriers Act Accessibility Guidelines for Buildings and Facilities (ADAABAAG) as published in the Federal Register on July 23, 2004.
FWS should follow the scoping and technical requirements under the ABA sections. This direction covers accessibility to sites, facilities, buildings and elements by individuals with disabilities. The requirements are to be applied during design, construction, additions to and alterations of facilities.

Draft Final Accessibility Guidelines for Outdoor Developed Areas
Many FWS facilities can be characterized as Outdoor Developed Areas. The Access Board is proposing to issue accessibility guidelines for outdoor developed areas designed, constructed or altered by Federal agencies subject to the ABA of 1968. The guidelines cover trails, outdoor recreation access routes, beach access routes and picnic and camping facilities. Once these guidelines are finalized they will become the technical requirements for accessibility in outdoor developed areas. At this time, FWS may use these guidelines.

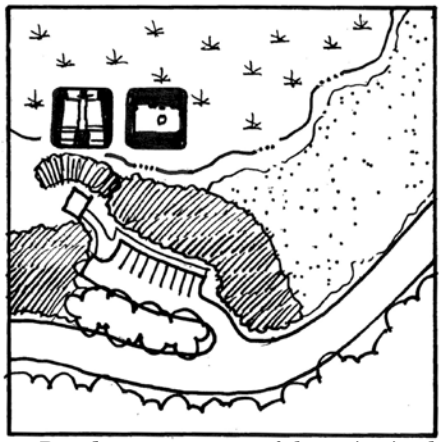
Accessibility Guidebook for Outdoor Recreation and Trails, USDA Forest Service, April 2006.
These guidelines only apply within National Forest System boundaries. However, they are a very useful tool for FWS projects recognizing that the Draft Final Accessibility Guidelines for Outdoor Developed Areas are still a work in progress.

And In General…
- Use principles of universal design—programs and facilities should be usable by all people, to the greatest extent possible, without separate or segregated access for people with disabilities.
- Accessibility does not supersede requirements for safety.
- Consider the level of development at a site to help balance safety and accessibility.

VE-4 Facilitate Compatible Wildlife Dependent Recreation and Education

Intent

The FWS mission is working with others to conserve, protect and enhance fish, wildlife, plants and their habitats for the continuing benefit of the American people. The mission of the Service should be integrated and transparent in the design of roadways on FWS managed lands. Roadways are key in fulfilling the Service's priority of connecting people with nature, and can provide opportunities to do so in ways that are compatible with the conservation mission of the Service.



Roadways are one of the principal infrastructure elements that facilitate access to the Big 6 on FWS managed lands.

Principles

- Consider whether current or anticipated visitor impacts are compatible with wildlife and their habitats
- Consider safety for visitors, staff and wildlife
- Provide orientation and interpretive information to support visitor experiences
- Consider the enabling legislation of the refuge - what is the purpose of the unit?
- Consider relationships with other recreational or educational sites within the region
- Consider demand, site carrying capacity and quality of visitor experience
- Determine what kind of access to recreation sites is available, appropriate and necessary
- Consider impacts to recreational activities from roads
- Promote appropriate facilities for safely viewing wildlife from roads where necessary
- Plan for appropriate signage, including entrance, orientation, directional and interpretive
- Consider access for and needs of school groups

Metrics

- Visitor counts
- Diversity and quality of activities available for visitors
- Ease of use (proximity, clarity, etc.) of recreational and educational elements

Resources

California State Parks Children in Nature Campaign.

http://www.parks.ca.gov/?page_id=24914.

Information on local, regional and national programs to connect kids with nature.

Children and Nature Network. See: http://www.childrenandnature.org/movement/info.

National Wildlife Federation's kids outside program.

See: http://www.nwf.org/beoutthere/.

Washington State Parks "No Child Left Inside" campaign.

See: http://www.parks.wa.gov/NoChildLeftInside/.

USDA Forest Service Discover the Forest campaign.

http://www.discovertheforest.org/index.php.

Bicycling on federal lands - case studies include two National Wildlife Refuges.

FHWA. 2008. Guide to Promoting Bicycling on Federal Lands. FHWA Pub. No. FHWA-CFL/TD-08-007.

The Big Six

The 1997 Refuge System Improvement Act outlines "The Big Six" priority public uses for Refuge system improvements:

- Hunting
- Fishing
- Wildlife Photography
- Wildlife Observation
- Environmental Interpretation
- Environmental Education

Auto tour route at Ridgefield NWR provides visitors access to Big 6 activities, such as wildlife observation and photography.

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Appendices

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Appendix B: Glossary

Abbreviations

ABA Architectural Barriers Act

ABAAS Architectural Barriers Act Accessibility Standards

ADA Americans with Disabilities Act

ASCE American Society of Civil Engineers

BGEPA Bald and Golden Eagle Protection Act

BLM Bureau of Land Management

CCP Comprehensive Conservation Plan

CFR Code of Federal Regulations

DCR Division of Diversity and Civil Rights (FWS Region 1)

EE Environmental Education

ES Ecological Services

ESA Endangered Species Act

FHWA Federal Highway Administration

FWCA Fish and Wildlife Coordination Act

FWS U.S. Fish & Wildlife Service (also Service, USFWS)

GIS Geographic Information System

LID low impact development

LOS level of service

LRTP Long Range Transportation Plan

MBTA Migratory Bird Treaty Act

NDS natural drainage system

NEPA National Environmental Policy Act

NWR National Wildlife Refuge (also Refuge).

NWRS National Wildlife Refuge System

ODOT Oregon Department of Transportation

R1 Region 1 of the FWS (HI, ID, OR, WA, Pacific Islands)

ROW Right-of-way

SAMMS Service Asset Maintenance Management System

USDA United States Department of Agriculture

USFS United States Forest Service

VMT Vehicle miles traveled

WDFW Washington State Department of Fish and Wildlife

WSDOT Washington State Department of Transportation

WSPRC Washington State Parks and Recreation Commission

WVC Wildlife-vehicle collisions

Definitions

Adaptive Management. Refers to a process in which policy decisions are implemented within a framework of scientifically driven experiments to test predictions and assumptions inherent in management plan. Analysis of results help managers determine whether current management should continue as is or whether it should be modified to achieve desired conditions.

Alternative. Alternatives are different means of accomplishing Refuge purposes and goals and contributing to the System mission (draft Service Manual 602 FW 1.5). The no action alternative is the manner in which the refuge is currently managed, while the action alternatives are all other alternatives.

Bald and Golden Eagle Protection Act (Federal). This law makes it illegal for anyone to take (as defined therein) a bald or golden eagle, or their parts, nests, or eggs except as authorized under a permit. Since this law extends protection to eagle nests, it may come into play during the construction and maintenance of transportation infrastructure.

Biological Diversity (also Biodiversity). The variety of life and its processes, including the variety of living organisms, the genetic differences among them, and the communities and ecosystems in which they occur (USFWS Manual 052 FW 1. 12B). The System's focus is on indigenous species, biotic communities, and ecological processes.

Biological Integrity. Biotic composition, structure, and functioning at genetic, organism, and community levels comparable with historic conditions, including the natural biological processes that shape genomes, organisms, and communities (NWRS Biological integrity policy).

Compatible Use. A wildlife-dependent recreational use or any other use of a Refuge that, in the sound professional judgment of the Director, will not materially interfere with or detract from the fulfillment of the Mission of the System or the purposes of the refuge (Service Manual 603 FW 3.6). A compatibility determination supports the selection of compatible uses and identifies stipulations or limits necessary to ensure compatibility.

Comprehensive Conservation Plan. A document that describes the desired future conditions of the Refuge, and provides long-range guidance and management direction for the Refuge manager to accomplish the purposes of the refuge, contribute to the mission of the System, and to meet other relevant mandates (Service Manual 602 FW 1.5).

Contaminants (also Environmental Contaminants). Chemicals present at levels greater than those naturally occurring in the environment resulting from anthropogenic or natural processes that potentially result in changes to biota at any ecological level (USGS, assessing EC threats to lands managed by USFWS). Pollutants that degrade other resources upon contact or mixing (Adapted from Webster's II).

Cooperative Agreement. This is a simple habitat protection action, in which no property rights are acquired. An agreement is usually long term but can be modified by either party. They are most effective in establishing multiple use management of land. An example would be a wildlife agreement on a Corps reservoir.

Context Sensitive Solutions (CSS). A theoretical and practical approach to transportation decision-making and design that takes into consideration the communities and lands through which streets, roads, and highways pass ("the context"). CSS seeks to balance the need to move vehicles and other transportation modes efficiently and safely with other desirable outcomes, including historic preservation, environmental goals such as wildlife and habitat conservation and the creation of vital public spaces.

Critical Habitat. Areas that are essential to the conservation of ESA listed species.

Cultural Resources. The physical remains, objects, historic records and traditional lifeways that connect us to our nation's past (USFWS, Considering Cultural Resources).

Disturbance. Significant alteration of habitat structure or composition. May be natural (e.g. fire) or human-caused events (e.g. aircraft overflights).

Ecosystem. A dynamic and interrelating complex of plant and animal communities and their associated non-living environment.

Ecosystem Management. Management of natural resources using system-wide concepts to ensure that all plants and animals in ecosystems are maintained at viable levels in native habitats and that basic ecosystem processes are perpetuated indefinitely.

Environmental Assessment. A concise public document, prepared in compliance with the National Environmental Policy Act (NEPA), that briefly discusses the purpose and need for an action, alternatives to such action, and provides sufficient evidence and analysis of impacts to determine whether an environmental impact statement must be prepared, or a finding of no significant impact can be issued (40 CFR 1508.9).

Endangered Species Act (Federal). The purpose of the ESA is to protect and recover endangered and threatened species and the ecosystems upon which they depend. Under the ESA, species may be listed as either endangered or threatened and critical habitat may be designated.

ESA Listed Species. A plant or animal species listed under the Endangered Species Act that is in danger of extinction throughout all or a significant portion of its range (endangered) or likely to become so within the foreseeable future (threatened).

Environmental Education Facility. A building or site with one or more classrooms or teaching areas and environmental education resources to accommodate groups of students.

Fish and Wildlife Coordination Act (Federal). This law provides the basic authority for the FWS to evaluate impacts to all fish and wildlife from proposed water resource development projects. This law may come into play for transportation projects that involve effects to a water body(ies).

Gap Analysis. Analysis done to identify and map elements of biodiversity that are not adequately represented in the nation's network of reserves. It provides an overview of the distribution and conservation status of several components of biodiversity, with an emphasis on vegetation and terrestrial vertebrates (Cassidy et al.1997).

Goal. Descriptive, open-ended and often broad statement of desired future conditions that conveys a purpose but does not define measurable units (Draft Service Manual 620 FW 1.5).

Green infrastructure. A concept and approach in which natural assets are managed and/or designed to provide multiple ecosystem and human services, including services such as stormwater management, flood prevention, carbon sequestration, and habitat. Green infrastructure includes natural drainage systems (NDS) and may be applied as a tool in achieving low impact development (LID).

Habitat. Suite of existing environmental conditions required by an organism for survival and reproduction. The place where an organism typically lives.

Habitat Connectivity (Also Landscape Connectivity). The arrangement of habitats that allows organisms and ecological processes to move across the landscape; patches of similar habitats are either close together or linked by corridors of appropriate vegetation/habitat. The opposite of fragmentation (Turnbull NWR Habitat Management Plan).

Habitat Management Plan. A plan that guides Refuge activities related to the maintenance, restoration, and enhancement of habitats for the benefit of wildlife, fish, and plant populations.

Habitat Restoration. Management emphasis designed to move ecosystems to desired conditions and processes and/or to healthy ecosystems.

Historic Conditions. Composition, structure and functioning of ecosystems resulting from natural processes that we believe, based on sound professional judgment, were present prior to substantial human related changes to the landscape (NWRS Biological integrity policy).

Hydrologic influence. Having an effect on water quality and quantity.

Hydrology. A science dealing with the properties, distribution and circulation of water on and below the earth's surface and in the atmosphere (yourdictionary.com).

Indicator. Something that serves as a sign or symptom (Webster's II).

Interpretation. A teaching technique that combines factual information with stimulating explanation (yourdictionary.com). Frequently used to help people understand natural and cultural resources.

Interpretive Trail. A trail with informative signs, numbered posts that refer to information in a brochure, or where guided talks are conducted for the purpose of providing factual information and stimulating explanations of what visitors see, hear, feel, or otherwise experience while on the trail.

Landform. A natural feature of a land surface (yourdictionary.com).

Landscape Linkages. Landscape features linking areas of similar habitat. Plants and smaller animals are able to use landscape linkages to move between larger landscape blocks over a period of generations.

Landscape Ecology. The science and study of the relationship between spatial pattern and ecological processes on a wide variety of landscape scales and organizational levels.

Low Impact Development (LID). A stormwater management strategy that emphasizes conservation and use of existing natural site features integrated with distributed, small-scale stormwater controls to more closely mimic natural hydrologic patterns. (LID Guidance Manual for Puget Sound).

Maintenance. The upkeep of constructed facilities, structures and capitalized equipment necessary to realize the originally anticipated useful life of a fixed asset.

Maintenance includes preventative maintenance; cyclic maintenance; repairs; replacement of parts, components, or items of equipment, periodic condition assessment; periodic inspections, adjustment, lubrication and cleaning (non-janitorial) of equipment; painting, resurfacing, rehabilitation; special safety inspections; and other actions to assure continuing service and to prevent breakdown.

Mesh Size. The average area or diameter of the polygons enclosed by a road network, as in a fishnet; it is proportional to road density but focuses on the enclosed parcels rather than the roads (Forman 2003).

Migratory Bird Treaty Act (Federal). This law makes it illegal for anyone to take any migratory bird, or the parts, nests, or eggs of migratory birds, except under the terms of a valid permit issued pursuant to federal regulations. This law can come into play during the maintenance and removal of transportation infrastructure as well as during the construction of new structures.

Mission Statement. Succinct statement of a unit's purpose and reason for being.

Monitoring. The process of collecting information to track changes of selected parameters over time.

National Environmental Policy Act of 1969 (NEPA). Requires all Federal agencies, including the Service, to examine the environmental impacts of their actions, incorporate environmental information, and use public participation in the planning and implementation of all actions. Federal agencies must integrate NEPA with other planning requirements, and prepare appropriate NEPA documents to facilitate better environmental decision making (from 40 CFR 1500).

National Register of Historic Places. The Nation's master inventory of known historic properties administered by the National Park Service. Includes buildings, structures, sites, objects and districts that possess historic, architectural, engineering, archeological, or cultural significance at the national, state and local levels.

National Wildlife Refuge (also Refuge). A designated area of land, water, or an interest in land or water within the System.

National Wildlife Refuge System (NWRS; also System). Various categories of areas administered by the Secretary of the Interior for the conservation of fish and wildlife, including species threatened with extinction; all lands, waters and interests therein administered by the Secretary as wildlife refuges; areas for the protection and conservation of fish and wildlife that are threatened with extinction; wildlife ranges; games ranges; wildlife management areas; or waterfowl production areas.

Native. With respect to a particular ecosystem, a species that, other than as a result of an introduction, historically occurred or currently occurs in that ecosystem (NWRS Biological integrity policy).

Natural Drainage System (NDS). A set of stormwater management features using plants and specialized soils that slow and infiltrate stormwater and can help remove pollutants through filtration and bioremediation. These features—such as open, vegetated swales, stormwater cascades and small rain gardens or wet ponds—mimic or restore natural functions impeded by development. In contrast to pipes and vaults, these systems increase in functional value over time.

Non-Consumptive Recreation. Recreational activities that do not involve harvest, removal or consumption of fish, wildlife or other natural resources.

Noxious Weed. A plant species designated by Federal or State law as generally possessing one or more of the following characteristics: aggressive or difficult to manage; parasitic; a carrier or host of serious insect or disease; or non-native, new, or not common to the United States, according to the Federal Noxious Weed Act (PL 93-639), a noxious weed is one that causes disease or has adverse effects on man or his environment and therefore is detrimental to the agriculture and commerce of the United States and to the public health.

Nutrient Loading. The presence of nutrients, such as nitrogen and phosphorus, in waterways insufficient amounts to cause effects such as algal blooms and oxygen depletion, with potentially lethal effects on fish and wildlife species.

Operations. Activities related to the normal performance of the functions for which a facility or item of equipment is intended to be used. Costs such as utilities (electricity, water, sewage) fuel, janitorial services, window cleaning, rodent and pest control, upkeep of grounds, vehicle rentals, waste management and personnel costs for operating staff are generally included within the scope of operations.

Outreach. The process of providing information to the public on a specific issue through the use of the media, printed materials and presentations.

Plant Community. An assemblage of plant species unique in its composition that occurs in particular locations, under particular influences, which reflect or integrate the environmental influences on the site, such as soils, temperature, elevation, solar radiation, slope, aspect and rainfall.

Preferred Alternative. This is the alternative determined (by the decision maker) to best achieve the Refuge purpose, vision and goals; that best contributes to the System mission and addresses the significant issues; and that is consistent with principles of sound fish and wildlife management.

Priority Public Uses. Hunting, fishing, wildlife observation and photography, environmental education and interpretation were identified by the National Wildlife Refuge system Improvement Act of 1997 as the six ("Big Six") priority public uses of the National Wildlife Refuge System.

Public. Individuals, organizations, and groups outside the planning team, including officials of Federal, State, and local government agencies, Indian tribes and foreign nations. It includes those who may or may not have indicated an interest in Service issues and those who may be affected by Service decisions.

Refuge Purpose(s). The purpose(s) specified in or derived from the law, proclamation, executive order, agreement, public land order, donation document, or administrative memorandum establishing, authorizing, or expanding a refuge, a refuge unit, or refuge subunit (Draft Service Manual 602 EW 1.5).

Restoration. The act of bringing back to a former or original condition (Webster's II).

Riparian. An area or habitat that is transitional from terrestrial to aquatic ecosystems, including streams, lakes, wet areas, and adjacent plant communities and their associated soils which have free water at or near the surface; an area whose components are directly or indirectly attributed to the influence of water; and of or relating to a river. Specifically applied to ecology, "riparian" describes the land immediately adjoining and directly influenced by streams. For example, riparian vegetation includes any and all plant life growing on the land adjoining a stream and directly influenced by the stream.

Road Density. The average total road length per unit area of landscape (i.e. kilometers per square km, or miles per square mile) (Forman 2003).

Road-Effect Zone. The zone of influence of a roadway into the surrounding areas. Distance depends upon the type of effect and site conditions (Forman 2003; see graphic, p. 308).

Roadway. The suite of typical improvements associated with a vehicle-focused transportation project. This extends from the centerline of an existing or proposed road outward, to include associated infrastructure components such as paving, utilities, grading and planting. Roadway also refers here to other facilities and infrastructure commonly associated with vehicular transportation, such as parking, visitor contact facilities and pullouts. From an ecological perspective, the roadway conceptually includes impacts such as habitat fragmentation, habitat disturbance, pollution, and aquatic and terrestrial species conflicts.

Strategy. A specific action, tool, or technique or combination of actions, tools, and techniques used to meet unit objectives (Service Manual 602 FW 1.5).

Viewpoint. A designated point that provides an opportunity to see wildlife or habitats of interest. The point may or may not be "supported" with an interpretive sign. Usually the viewpoint is supported by a pullout or a parking area.

Visitor Center. A building with staff that provides visitors with interpretation, education and general information about the natural and cultural resources of the Refuge and the local area.

Visitor Contact Point or Center. A kiosk or other location where visitors may go to learn about Refuge resources, facilities, trails, etc.

Vision Statement. A concise statement of the desired future condition of the planning unit, based primarily upon the System mission, specific Refuge purposes and other relevant mandates (Service Manual 602 FW 1.5).

Watershed. The region or area drained by a river system or other body of water (Webster's II).

Wetlands. Transitional lands between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water at some time each year (Service Manual 660 FW 2).

- Permanent wetland - a wetland basin or portion of a basin that is covered with water throughout the year in all years except extreme drought. Typically, the basin bottom is vegetated with submerged aquatic plant species, including milfoil, coontail and pondweeds.

- Semi-permanent wetland - a wetland basin or portion of a basin where surface water persists throughout the growing season of most years. Typical vegetation is composed of cattails and bulrushes.

- Seasonal wetland - a wetland basin or portion of a basin where surface water is present in the early part of the growing season but is absent by the end of the season in most years. Typically vegetated with sedges, rushes, spikerushes or burreed.

Wildlife-Dependent Recreation. Hunting, fishing, wildlife observation and photography, environmental education and interpretation. These are also referred to as the priority public uses of the National Wildlife Refuge System or "Big Six".

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