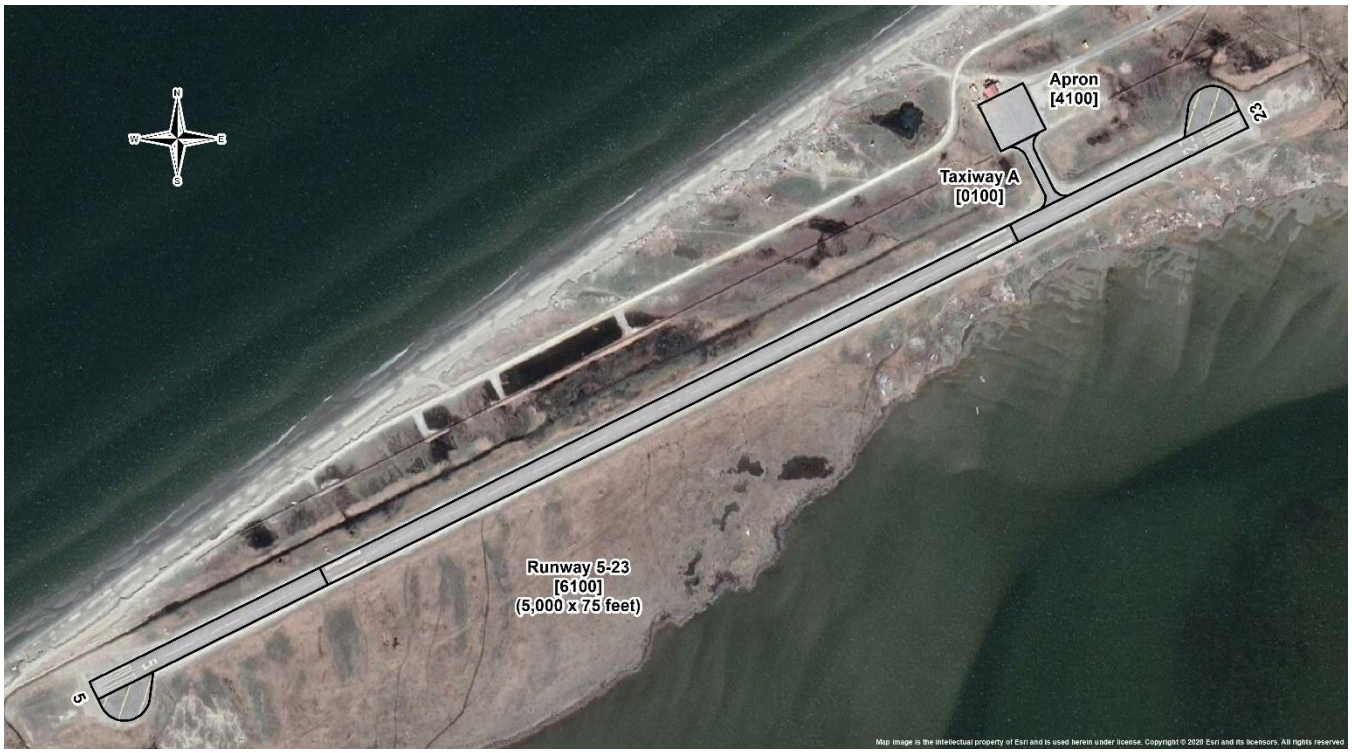
Alaska DOT&PF

Statewide Design and Engineering Services
Pavement Management and Preservation Office
5800 East Tudor Road, Anchorage AK 99507-1286

Pavement Inspection Report
Shishmaref Airport



Airport Name	IATA	ICAO	Latitude	Longitude	Elevation (ft)
Shishmaref	SHH	PASH	66° 14' 58.5" N	166° 05' 21.7" W	13.9

Please refer all questions or for further information about this report, please contact the AKDOT&PF Pavement Management and Preservation Office as follows:

Point of Contact	Phone	Email	Date Inspected	Date Published
Mr. Andrew Pavey, Pavement Management Engineer	(907) 269 6213	andrew.pavey@alaska.gov	July 2024	November 2024

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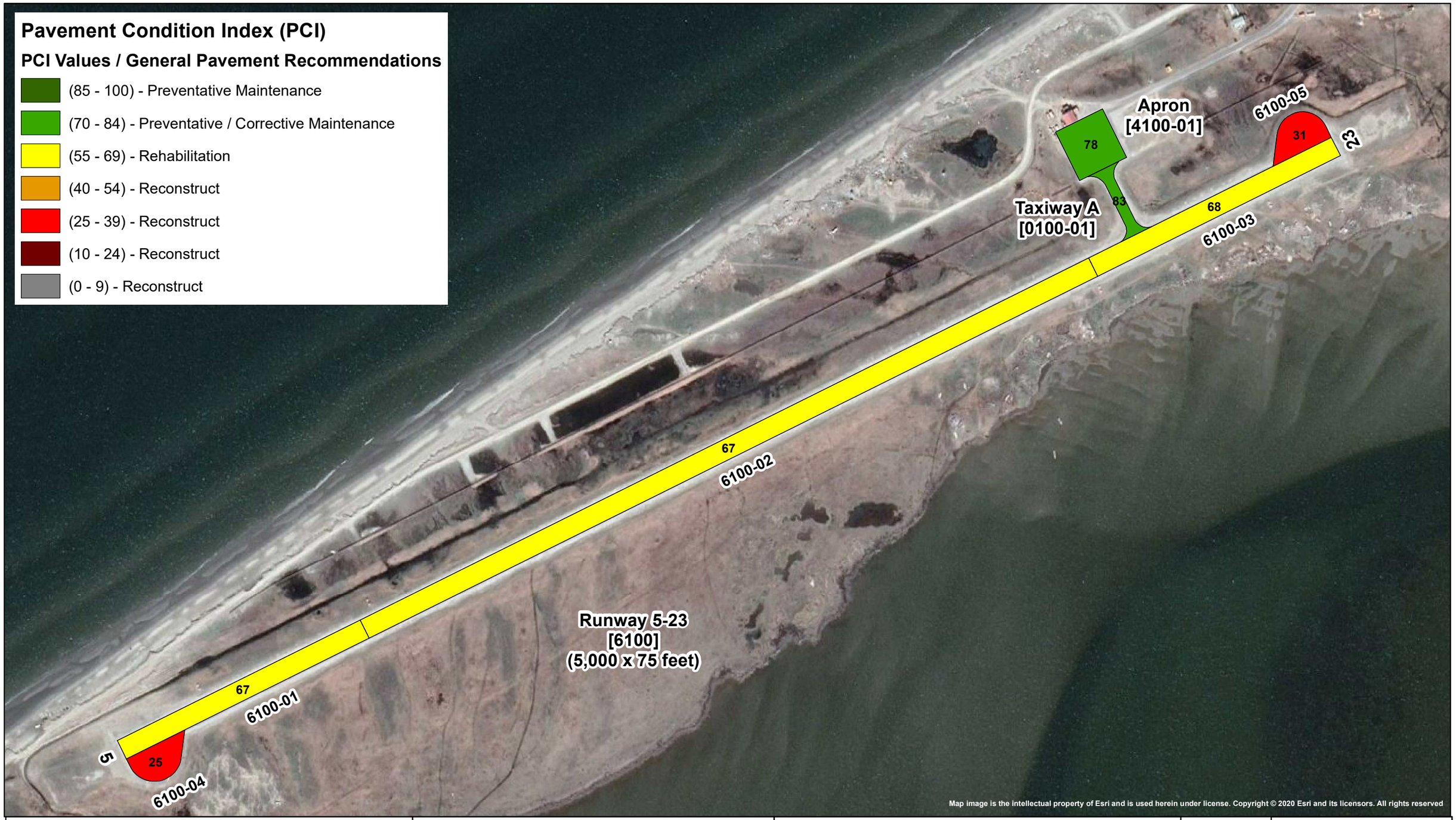


Shishmaref Airport

Airport Code: SHH
Site Number: 50701.01*A

Pavement Condition Index (PCI)

Target PCI Range for Runways: 70 to 100
Target PCI Range for Taxiways and Aprons: 60 to 100

N W E S

2024 Pavement Inspection Results

0 250 500 1,000
Feet

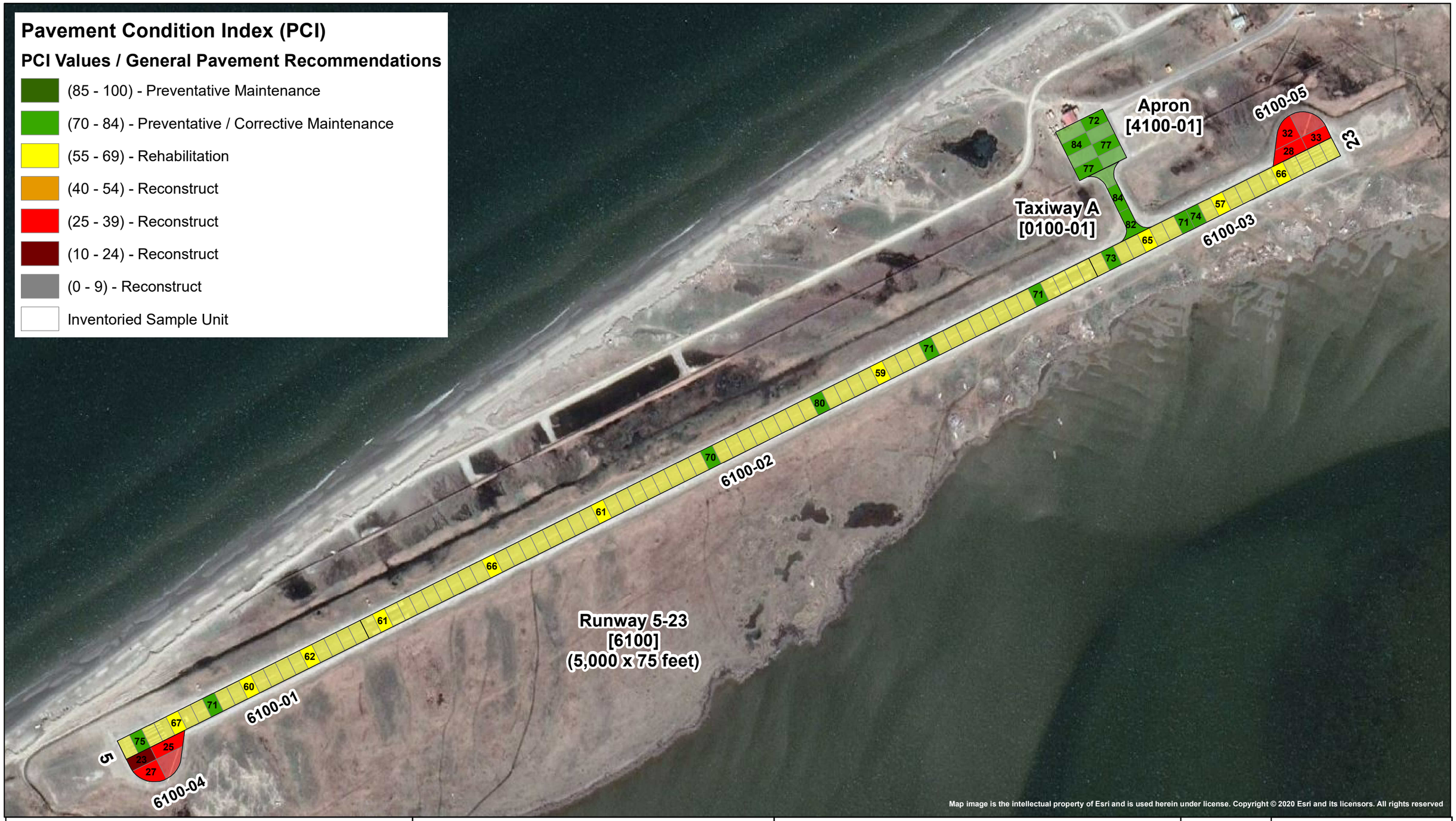
Map Created by Duval Engineering for AK DOT&PF

Map 1 of 6

Pavement Condition Index (PCI)

PCI Values / General Pavement Recommendations

- (85 - 100) - Preventative Maintenance
- (70 - 84) - Preventative / Corrective Maintenance
- (55 - 69) - Rehabilitation
- (40 - 54) - Reconstruct
- (25 - 39) - Reconstruct
- (10 - 24) - Reconstruct
- (0 - 9) - Reconstruct
- Inventoried Sample Unit



Shishmaref Airport

Airport Code: SHH
Site Number: 50701.01*A

Sample Unit
Pavement Condition Index (PCI)
Target PCI Range for Runways: 70 to 100
Target PCI Range for Taxiways and Aprons: 60 to 100

N W E S

2024 Pavement Inspection Results

0 250 500 1,000
Feet

Map Created by Duval Engineering for AK DOT&PF

Map 2 of 6

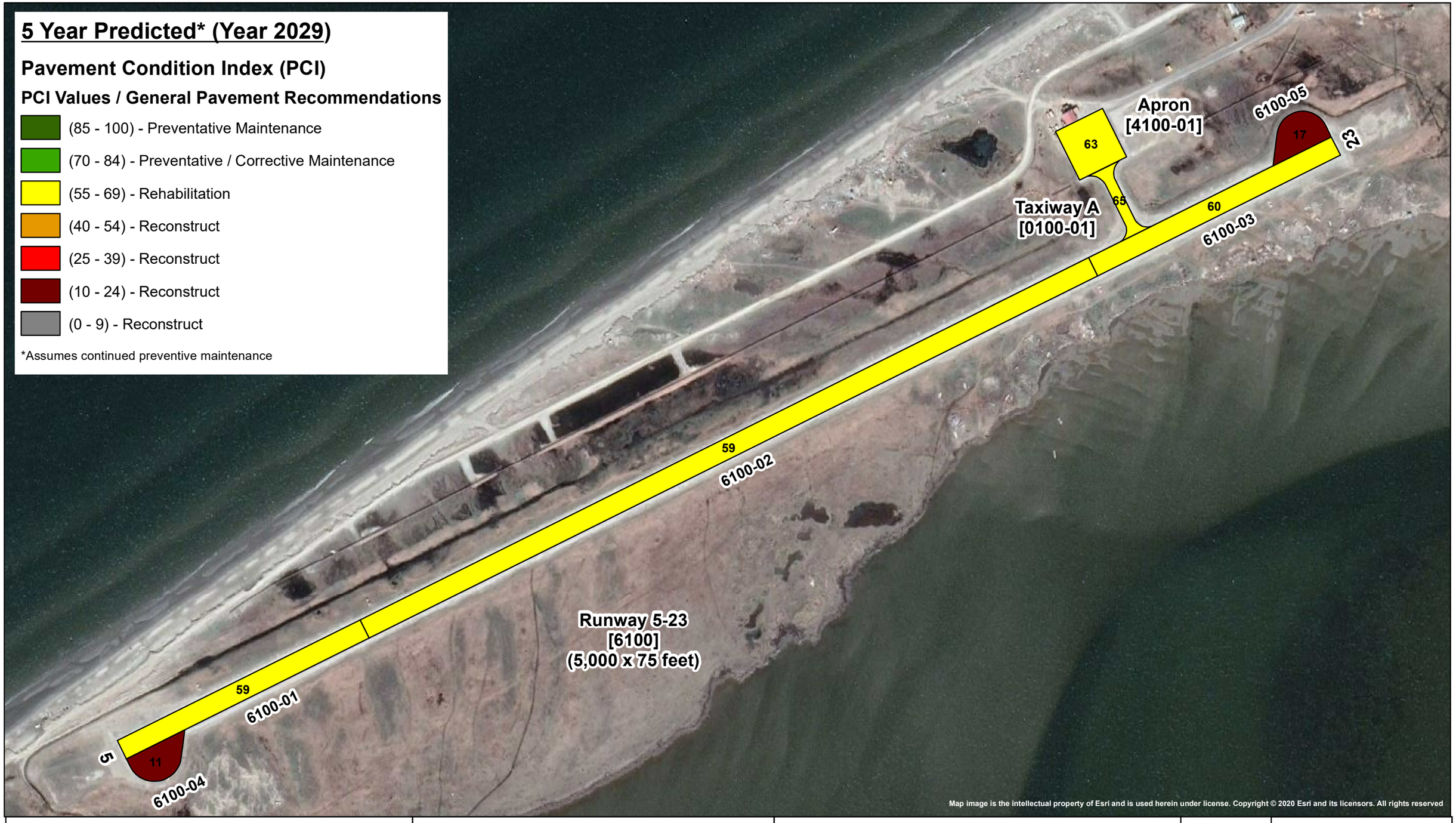
5 Year Predicted* (Year 2029)

Pavement Condition Index (PCI)

PCI Values / General Pavement Recommendations

- (85 - 100) - Preventative Maintenance
- (70 - 84) - Preventative / Corrective Maintenance
- (55 - 69) - Rehabilitation
- (40 - 54) - Reconstruct
- (25 - 39) - Reconstruct
- (10 - 24) - Reconstruct
- (0 - 9) - Reconstruct

*Assumes continued preventive maintenance



Shishmaref Airport

Airport Code: SHH
Site Number: 50701.01*A

5 Year Predicted
Pavement Condition Index (PCI)

Target PCI Range for Runways: 70 to 100
Target PCI Range for Taxiways and Aprons: 60 to 100

N W E S

2024 Pavement Inspection Results

0 250 500 1,000
Feet

Map Created by Duval Engineering for AK DOT&PF

Map 3 of 6

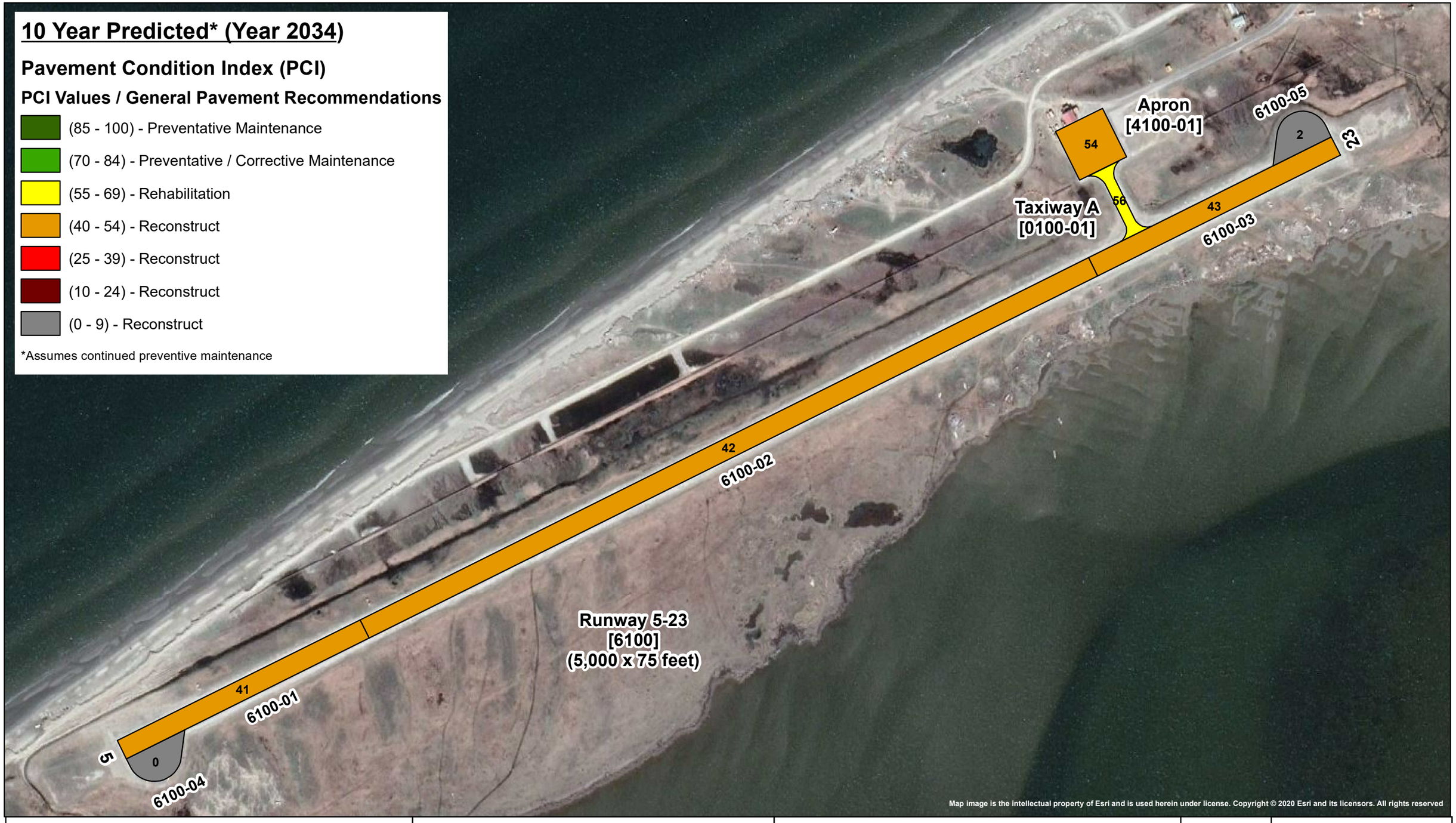
10 Year Predicted* (Year 2034)

Pavement Condition Index (PCI)

PCI Values / General Pavement Recommendations

- (85 - 100) - Preventative Maintenance
- (70 - 84) - Preventative / Corrective Maintenance
- (55 - 69) - Rehabilitation
- (40 - 54) - Reconstruct
- (25 - 39) - Reconstruct
- (10 - 24) - Reconstruct
- (0 - 9) - Reconstruct

*Assumes continued preventive maintenance



Shishmaref Airport

Airport Code: SHH
Site Number: 50701.01*A

10 Year Predicted
Pavement Condition Index (PCI)

Target PCI Range for Runways: 70 to 100
Target PCI Range for Taxiways and Aprons: 60 to 100

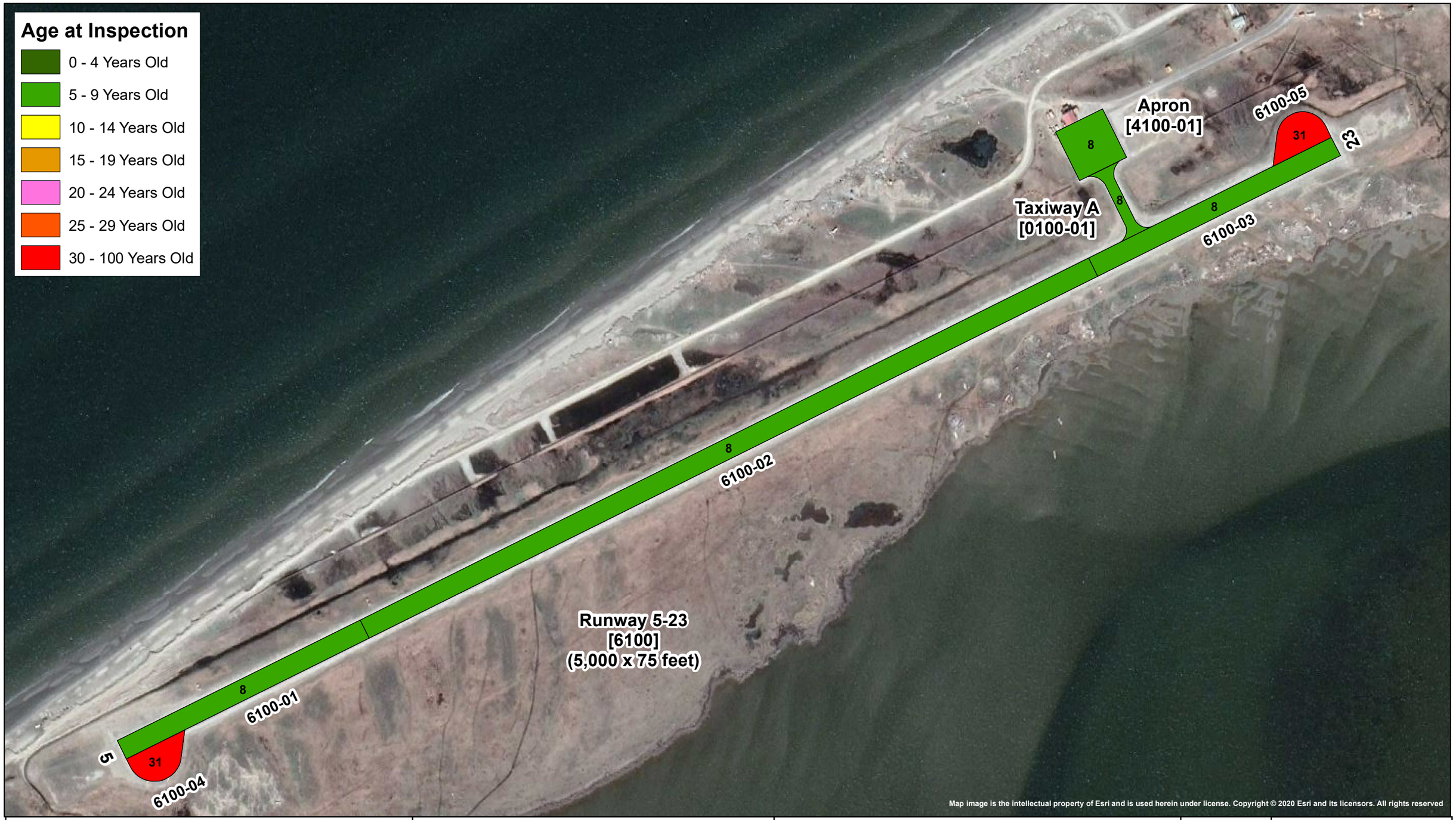
N W E S

2024 Pavement Inspection Results

0 250 500 1,000
Feet

Map Created by Duval Engineering for AK DOT&PF

Map 4 of 6



Shishmaref Airport

Airport Code: SHH
Site Number: 50701.01*A

Pavement Age at Inspection

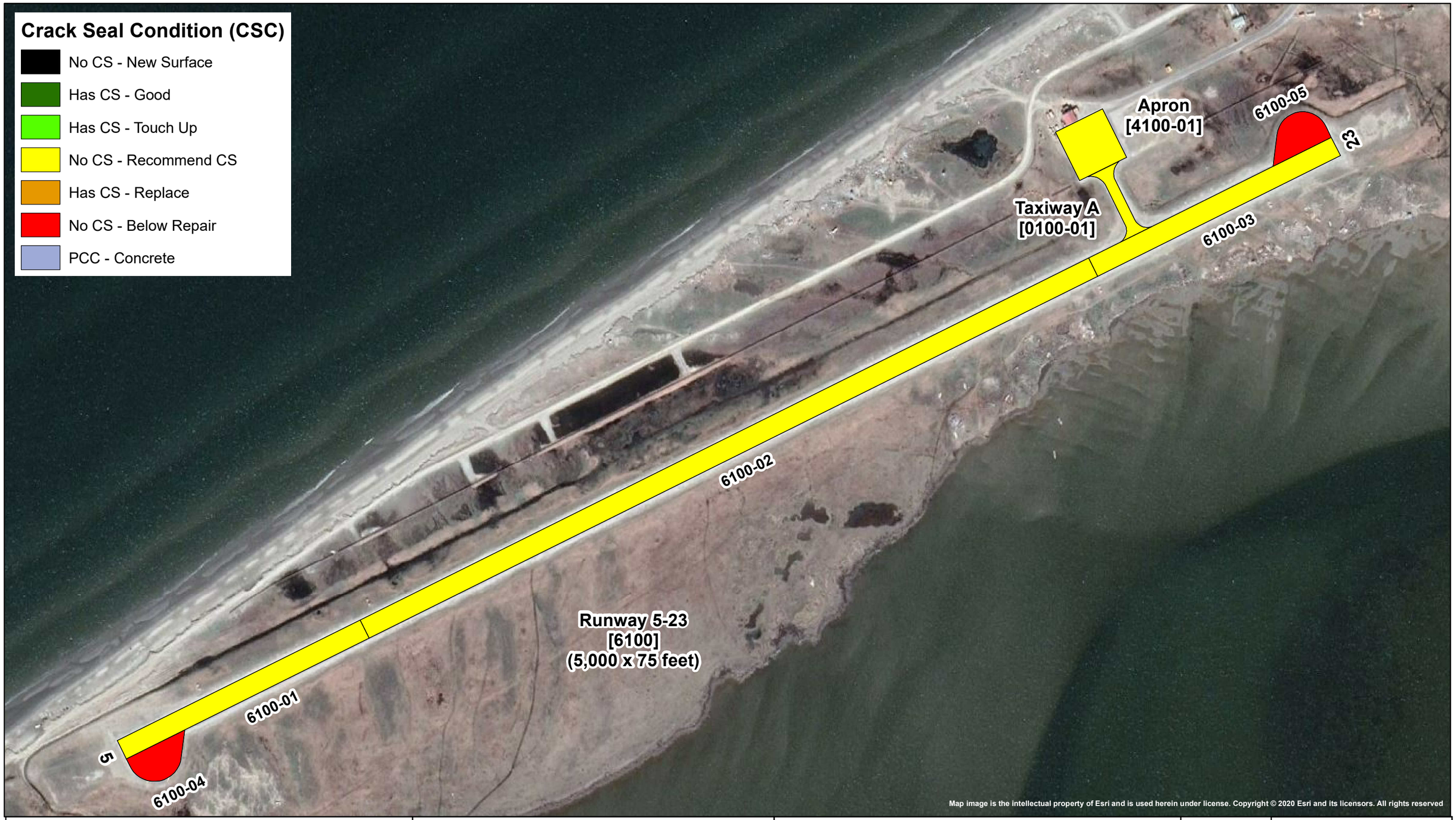
N
W E
S

2024 Pavement Inspection Results

0 250 500 1,000
Feet

Map Created by Duval Engineering for AK DOT&PF

Map 5 of 6



Shishmaref Airport

Airport Code: SHH
Site Number: 50701.01*A

Pavement Crack Seal Condition (CSC)

N W E S

2024 Pavement Inspection Results

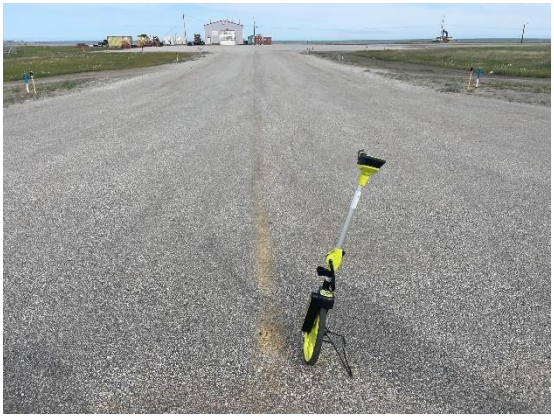
0 250 500 1,000
Feet

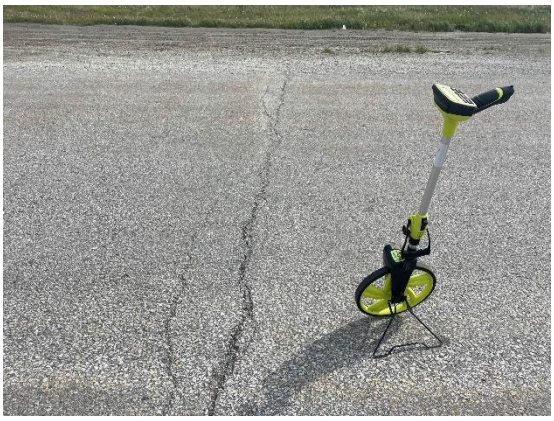
Map Created by Duval Engineering for AK DOT&PF

Map 6 of 6

AIRPORT PAVEMENT INSPECTION NOTES BY BRANCH

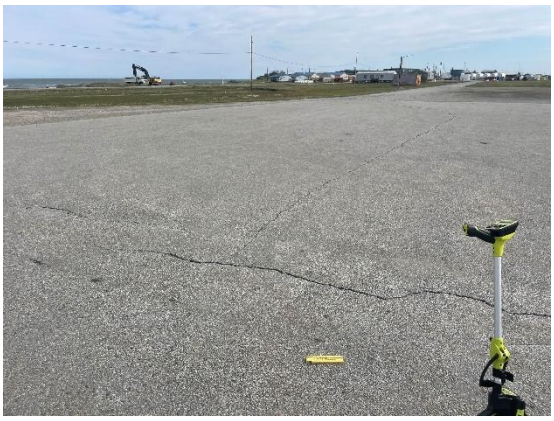
Branch ID	Branch Name	Branch Use	No. of Sections	Area (sf)	Weighted Average PCI
0100	Taxiway A	Taxiway	1	13,300	83





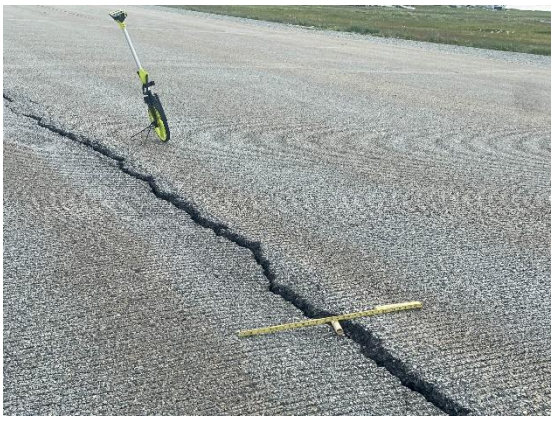
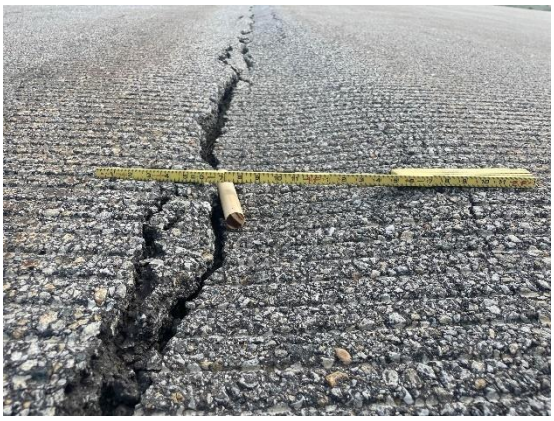
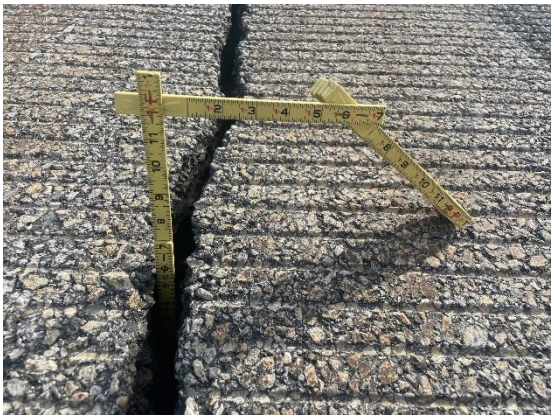
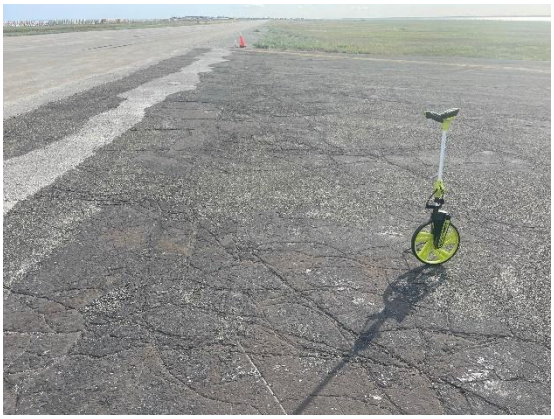
Taxiway A was first built in 1993 with emulsified asphalt stabilized base on top of a geo-web reinforced subbase. In 2016, the taxiway then received a 2-inch-thick overlay. Crack seal operations have not been performed on the taxiway. The most common distresses observed are low to medium severity longitudinal and transverse cracking, and low severity weathering. Field observations include the development of new unfilled cracks, some of which are widening to the level of medium severity.

Branch ID	Branch Name	Branch Use	No. of Sections	Area (sf)	Weighted Average PCI
4100	Apron	Apron	1	38,600	78



The Shishmaref Apron was first constructed in 1986 and then rehabilitated in 1993 with a combination of emulsified asphalt stabilized base on top of a geo-web reinforced subbase. In 2016, the apron received a 2-inch-thick overlay. Crack seal operations have not been performed on the apron. The most common distresses observed are low to medium severity longitudinal and transverse cracking, low quantities of oil spillage, and low severity weathering. Field observations include the development of new unfilled cracks, some of which are widening to the level of medium severity.

Branch ID	Branch Name	Branch Use	No. of Sections	Area (sf)	Weighted Average PCI
6100	Runway 05/23	Runway	5	423,132	63

Runway 05/23 was first constructed in 1993 with emulsified asphalt stabilized base on top of a geo-web reinforced subbase. In 2016, the runway received a 2-inch-thick overlay. The turnarounds on either end of the runway did not receive the overlay. Crack seal operations have not been performed on the runway. The most common distresses observed are low to high severity longitudinal and transverse cracking, low to high severity depressions, and low severity weathering. Field observations include the widening of the paving joints which in turn have begun to depress greater than an inch in areas. The high severity depressions are created by settlement adjacent to the high severity centerline crack. The depth of these cracks is greater than six inches and penetrates through the overlay, the emulsified asphalt stabilized base, and into the geo-web reinforced subbase.

BRANCH CONDITION REPORT

Branch ID	No. of Sections	Sum Section Length (Ft)	Avg Section Width (Ft)	True Area (Sq Ft)	Use	Average PCI	Standard Deviation PCI	Weighted Average PCI
0100	1	262	40	13,300	TAXIWAY	82.50	0.00	82.50
4100	1	200	193	38,600	APRON	77.80	0.00	77.80
6100	5	5,480	99	423,132	RUNWAY	51.54	19.35	62.78

Note: the dimensions in the Branch Condition Report are derived from area calculations and may not reflect actual dimensions of individual sections. Refer to the maps for actual section dimensions.

BRANCH USE CONDITION REPORT

Use Category	No. of Sections	Total Area (Sq Ft)	Arithmetic Average PCI	Standard Deviation PCI	Weighted Average PCI
APRON	1	38,600	77.80	0.00	77.80
RUNWAY	5	423,132	51.54	19.35	62.78
TAXIWAY	1	13,300	82.50	0.00	82.50
ALL	7	475,032	59.71	20.88	64.56

SECTION CONDITION REPORT

Branch ID	Section ID	Last Const. Date	Surface	Use	Rank	True Area (Sq Ft)	Last Inspection Date	Age At Inspection	PCI
0100	0100-01	8/17/2016	AC	TAXIWAY	S	13,300	7/20/2024	8	83
4100	4100-01	8/17/2016	AC	APRON	S	38,600	7/20/2024	8	78
6100	6100-01	8/17/2016	AC	RUNWAY	S	75,000	7/20/2024	8	67
6100	6100-02	8/17/2016	AC	RUNWAY	S	225,000	7/20/2024	8	67
6100	6100-03	8/17/2016	AC	RUNWAY	S	75,000	7/20/2024	8	68
6100	6100-04	7/14/1993	AC	RUNWAY	S	23,132	7/20/2024	31	25
6100	6100-05	7/14/1993	AC	RUNWAY	S	25,000	7/20/2024	31	31

SECTION CONDITION REPORT (SUMMARY BY AGE CATEGORY)

Age Category	Average Age at Inspection	Total Area (Sq Ft)	Number of Sections	Arithmetic Average PCI	Standard Deviation PCI	Weighted Average PCI
06-10	8	426,900	5	72.42	6.49	68.67
31-35	31	48,132	2	27.95	2.85	28.06
ALL	15	475,032	7	59.71	20.88	64.56

Work History Report

Pavement Database: Alaska

Network: Shishmaref Airport **Branch:** 0100 Taxiway A **Section:** 0100-01 **Surface:**AC
L.C.D. 8/17/2016 **Use:** TAXIWAY **Rank:** S **Length:** 262.00 (Ft) **Width:** 40.00 (Ft) **True Area:** 13300.00000 (SqFt

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
8/17/2016	OL_2	2 in overlay	0.00	2.00	☑	Paving geotextile and 2" overlay, PG5
7/14/1993	NC-IN	New Construction - Initial	0.00	0.75	☑	(Funded via AIP)

Network: Shishmaref Airport **Branch:** 4100 Apron **Section:** 4100-01 **Surface:**AC
L.C.D. 8/17/2016 **Use:** APRON **Rank:** S **Length:** 200.00 (Ft) **Width:** 193.00 (Ft) **True Area:** 38600.00096 (SqFt

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
8/17/2016	OL_2	2 in overlay	0.00	2.00	☑	Paving geotextile and 2" overlay, PG5
7/14/1993	SR-AC	Surface Reconstruction - AC	0.00	0.75	☑	(Funded via AIP)
8/1/1986	HI-AG	New Construction	0.00	8.00	☑	(Funded via AIP)

Network: Shishmaref Airport **Branch:** 6100 05/23 **Section:** 6100-01 **Surface:**AC
L.C.D. 8/17/2016 **Use:** RUNWAY **Rank:** S **Length:** 1,000.00 (Ft) **Width:** 75.00 (Ft) **True Area:** 75000.00187 (SqFt

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
8/17/2016	OL_2	2 in overlay	0.00	2.00	☑	Paving geotextile and 2" overlay, PG5
6/17/2004	PA-AL	Patching - AC Leveling	0.00	0.00	☐	(Funded via AIP)
6/15/2004	CS-AC	Crack Sealing - AC	0.00	0.00	☐	(Funded via AIP)
7/14/1993	NC-IN	New Construction - Initial	0.00	0.00	☑	(Funded via AIP)

Network: Shishmaref Airport **Branch:** 6100 05/23 **Section:** 6100-02 **Surface:**AC
L.C.D. 8/17/2016 **Use:** RUNWAY **Rank:** S **Length:** 3,000.00 (Ft) **Width:** 75.00 (Ft) **True Area:** 225000.0000 (SqFt

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
8/17/2016	OL_2	2 in overlay	0.00	2.00	☑	Paving geotextile and 2" overlay, PG5
7/14/1993	NC-IN	New Construction - Initial	0.00	0.75	☑	(Funded via AIP)

Network: Shishmaref Airport **Branch:** 6100 05/23 **Section:** 6100-03 **Surface:**AC
L.C.D. 8/17/2016 **Use:** RUNWAY **Rank:** S **Length:** 1,000.00 (Ft) **Width:** 75.00 (Ft) **True Area:** 75000.00187 (SqFt

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
8/17/2016	OL_2	2 in overlay	0.00	2.00	☑	Paving geotextile and 2" overlay, PG5
7/14/1993	NC-IN	New Construction - Initial	0.00	0.00	☑	(Funded via AIP)

Network: Shishmaref Airport **Branch:** 6100 05/23 **Section:** 6100-04 **Surface:**AC
L.C.D. 7/14/1993 **Use:** RUNWAY **Rank:** S **Length:** 240.00 (Ft) **Width:** 130.00 (Ft) **True Area:** 23132.00000 (SqFt

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
7/14/1993	NC-IN	New Construction - Initial	0.00	0.00	☑	Sand Emulsion(Funded via AIP)

Network: Shishmaref Airport **Branch:** 6100 05/23 **Section:** 6100-05 **Surface:**AC
L.C.D. 7/14/1993 **Use:** RUNWAY **Rank:** S **Length:** 240.00 (Ft) **Width:** 140.00 (Ft) **True Area:** 25000.00000 (SqFt

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
7/14/1993	NC-IN	New Construction - Initial	0.00	0.00	☑	Sand-Emulsion(Funded via AIP)

Work History Report

Pavement Database: Alaska

Summary:

Work Description	Section Count	Area Total (SqFt)	Thickness Avg (in)	Thickness STD (in)
2 in overlay	5	426,900.00	2.00	0.00
Crack Sealing - AC	1	75,000.00	0.00	0.00
New Construction	1	38,600.00	8.00	0.00
New Construction - Initial	6	436,432.00	0.25	0.35
Patching - AC Leveling	1	75,000.00	0.00	0.00
Surface Reconstruction - AC	1	38,600.00	0.75	0.00

PHYSICAL PROPERTY DATA

		Pavement		Base		Subbase		Subgrade	
Branch ID	Section ID	Thick (in)	Type	Thick (in)	Type	Thick (in)	Type	Type	CBR
Taxiway A 0100	0100-01	2.0	P-401	3	Emulsified Asphalt Stabilized	8	Geo-Web Base	SP	8
Apron 4100	4100-01	2.0	P-401	3	Emulsified Asphalt Stabilized	8	Geo-Web Base	SP	8
Runway 5-23 6100	6100-01	2.0	P-401	3	Emulsified Asphalt Stabilized	8	Geo-Web Base	SP	8
	6100-02	2.0	P-401	3	Emulsified Asphalt Stabilized	8	Geo-Web Base	SP	8
	6100-03	2.0	P-401	3	Emulsified Asphalt Stabilized	8	Geo-Web Base	SP	8
	6100-04	-	-	3	Emulsified Asphalt Stabilized	8	Geo-Web Base	SP	8
	6100-05	-	-	3	Emulsified Asphalt Stabilized	8	Geo-Web Base	SP	8

AIRCRAFT FLEET MIX

No.	Aircraft	Gross Wt (lb)	% Gross Wt on Main Gear	Tire Pressure (psi)	Annual Departures	20 Yr Coverages
1	S-15	17,637	95.00	59	326	2,218
2	Cessna 208B	8,750	95.00	75	1,267	7,039
3	S-10	10,450	95.00	52	4	24
4	PA-31-325 Navajo C/R	6,536	95.00	66	347	1,876
5	D-15	17,120	95.00	63	440	3,797
6	King Air B200	12,590	95.00	98	142	1,157
7	Saab 340B	29,000	95.00	55	30	304
8	Q100/Dash 8-100	34,700	94.40	131	4	40
9	D-100	107,200	95.00	150	5	63
10	S-10	10,361	95.00	52	249	1,516
11	C-130	155,000	95.00	105	2	16

PAVEMENT CLASSIFICATION RATINGS

Runway	Critical Aircraft	Max Allowable Wt (lb)	Subgrade Mr (psi)	Evaluation Thickness (in)	Pass to Traffic Cycle Ratio	PCR
5-23	C-130	155,000	12,000	13.0	1.0	239/F/C/X/T

PCR CALCULATION NOTES

- 1% traffic growth assumed.
- Subgrade strength reduction for frost applied.
- S-10 and S-15 refer to “generic” single gear aircraft as modeled in FAARFIELD.
- D-15 and D-100 refer to “generic” dual gear aircraft as modeled in FAARFIELD.
- Emulsified asphalt layer conservatively modeled as a User Defined layer with E = 100,000 psi.
- GeoWeb base layer conservatively modeled as a User Defined layer with E = 20,000 psi.
- Technical evaluation per AC 150/5335-5D

REFERENCES

Year	Project No.	Document Title
2022	3-02-0404-XXX, NFAPT 0037	Plans, Shishmaref Airport Erosion Control
2015	3-02-0404-007, R61427	As-Built Plans, Shishmaref Airport Resurfacing
2012		Geotechnical Alternatives, Shishmaref Airport
1984	D-37322	AKDOT&PF Engineering Geology & Soils Report, Shishmaref Airport
1982		Shismaref Erosion Control Engineering Studies, P&N