# The Road Inventory of South Fork Salmon River National Fish Hatchery

## McCall, ID

Prepared By:
Federal Highway Administration
Central Federal Lands Highway Division
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# TABLE OF CONTENTS


| SECTION | | PAGE |
|---|---|---|
| **I.** | **INTRODUCTION** | 1 - 1 |
| **II.** | **SUMMARY INFORMATION** | |
| | Summaries by Condition, Surface Type and Functional Class | 2 - 1 |
| **III.** | **REFUGE ROUTE LOCATION MAPS** | 3 - 1 |
| **IV.** | **ROUTE IDENTIFICATION LIST** | 4 - 1 |
| **V.** | **ROUTE CONDITION RATING SHEETS** | 5 - 1 |
| **VI.** | **PARKING LOT CONDITION RATING SHEETS** | 6 - 1 |
| **VII.** | **BRIDGE INVENTORY INFORMATION** | 7 - 1 |
| **VIII.** | **PHOTOGRAPHIC SHEETS** | 8 - 1 |
| **IX.** | **ACCIDENT SUMMARY** | 9 - 1 |
| | **APPENDIX** | |
| | Functional Classification Table | i |
| | Description of Rating System | ii |

# INTRODUCTION

The Transportation Equity Act for the 21st Century (Public Law 105-178) created the Refuge Roads Program. Refuge roads are those public roads that provide access to or within a unit of the National Wildlife Refuge System and for which title and maintenance responsibility is vested in the United States Government. Funds from the Highway Trust Fund are available for refuge roads and can be used by the station to pay the cost of:

(a) Maintenance and improvements of refuge roads.
(b) Maintenance and improvements of:
    (1) Adjacent vehicle parking areas
    (2) Provision for pedestrians and bicycles and
    (3) Construction and reconstruction of roadside rest areas that are located in or adjacent to wildlife refuges
(c) Administrative costs associated with such maintenance and improvements.

The funds available for refuge roads are to be disbursed based on the relative needs of the various refuges in the National Wildlife Refuge System, and taking into consideration:

(a) The comprehensive conservation plan for each refuge;
(b) The need for access as identified through land use planning; and
(c) The impact of land use planning on existing transportation facilities.

To determine the relative needs of the U.S. Fish and Wildlife Service, the Federal Highway Administration (FHWA) was asked to inventory all public access roads and parking lots and provide a condition assessment of each. In 2008 the inventory was expanded to include administrative (service use only) roads and parking lots. An FHWA representative meets with refuge personnel to identify route segments and assign route numbers and functional classifications (See Appendix) for each route. All roads and parking lots are mapped using Trimble GPS units and visually assessed for condition using the RSL method of evaluation developed at Utah State University (See Appendix). Culverts, Gates, Guardrails and Low Water Crossings are also mapped and inspected for any obvious defects.

An estimate is provided, in year 2008 dollars, based on the condition determined by the rating system. Estimates are based upon data and location factors from the 2008 RS Means Heavy Construction Cost Data 22nd Annual Edition. Cost estimates should be evaluated on a case-by-case basis when being used for programming purposes.

Native Surfaced roads and parking lots already inventoried will not be re-inventoried and will not appear individually in report chapters 5, 6 and 8. Mileages and areas of native surfaced roads and parking lots will still appear in all summaries in the report and will remain in the road inventory database. In addition to this report, the FHWA will furnish the condition ratings of each route and segment to the Fish and Wildlife Service in a Microsoft Access database so the data can be included in their Real Property Inventory.

# South Fork Salmon River NFH

## Summaries

Route Miles and Percentages by Functional Class and Condition

**Condition Rating (Based on RSL)***

| | Excellent | | Good | | Fair | | Poor | | Failed | | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|
| F. C. | MILES | % | MILES | % | MILES | % | MILES | % | MILES | % | MILES |
| I | 0.00 | 0.0% | 0.00 | 0.0% | 0.00 | 0.0% | 0.00 | 0.0% | 0.00 | 0.0% | 0.00 |
| II | 0.00 | 0.0% | 0.00 | 0.0% | 0.00 | 0.0% | 0.00 | 0.0% | 0.00 | 0.0% | 0.00 |
| III | 0.00 | 0.0% | 0.00 | 0.0% | 0.00 | 0.0% | 0.00 | 0.0% | 0.00 | 0.0% | 0.00 |
| IV | 0.00 | 0.0% | 0.00 | 0.0% | 0.00 | 0.0% | 0.00 | 0.0% | 0.00 | 0.0% | 0.00 |
| V | 0.00 | 0.0% | 0.35 | 100.0% | 0.00 | 0.0% | 0.00 | 0.0% | 0.00 | 0.0% | 0.35 |
| **Totals** | **0.00** | **0.0%** | **0.35** | **100.0%** | **0.00** | **0.0%** | **0.00** | **0.0%** | **0.00** | **0.0%** | **0.35** |

*For a description of condition ratings for the various surface types see the Appendix.

### Route Miles and Percentages by Surface Type and Condition

**Paved Condition Rating [Condition(RSL)]**

| | Excellent | | Good | | Fair | | Poor | | Failed | | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Surface | MILES | % | MILES | % | MILES | % | MILES | % | MILES | % | MILES |
| AS | 0.00 | 0.0% | 0.00 | 0.0% | 0.00 | 0.0% | 0.00 | 0.0% | 0.00 | 0.0% | 0.00 |
| CO | 0.00 | 0.0% | 0.00 | 0.0% | 0.00 | 0.0% | 0.00 | 0.0% | 0.00 | 0.0% | 0.00 |
| **Totals** | **0.00** | **0.0%** | **0.00** | **0.0%** | **0.00** | **0.0%** | **0.00** | **0.0%** | **0.00** | **0.0%** | **0.00** |

**Unpaved Condition Rating [Condition(RSL)]**

| | Excellent | | Good | | Fair | | Poor | | Failed | | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Surface | MILES | % | MILES | % | MILES | % | MILES | % | MILES | % | MILES |
| GR | 0.00 | 0.0% | 0.35 | 100.0% | 0.00 | 0.0% | 0.00 | 0.0% | 0.00 | 0.0% | 0.35 |
| NA | 0.00 | 0.0% | 0.00 | 0.0% | 0.00 | 0.0% | 0.00 | 0.0% | 0.00 | 0.0% | 0.00 |
| PR | 0.00 | 0.0% | 0.00 | 0.0% | 0.00 | 0.0% | 0.00 | 0.0% | 0.00 | 0.0% | 0.00 |
| **Totals** | 0.00 | **0.0%** | 0.35 | **100.0%** | 0.00 | **0.0%** | 0.00 | **0.0%** | 0.00 | **0.0%** | **0.35** |

### Square Footage (Parking Areas)

**Condition Rating**

| | Excellent | | Good | | Fair | | Poor | | Failed | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Square | | Square | | Square | | Square | | Square | | Square |
| Surface | Feet | % | Feet | % | Feet | % | Feet | % | Feet | % | Feet |
| AS | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 |
| CO | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 |
| GR | 0 | 0.0% | 4,083 | 100.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 4,083 |
| NA | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 |
| PR | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 |
| **Totals** | **0** | **0.0%** | **4,083** | **100.0%** | **0** | **0.0%** | **0** | **0.0%** | **0** | **0.0%** | **4,083** |

# South Fork Salmon River NFH
# Summaries

## Route Miles and Percentages by Use Type and Condition

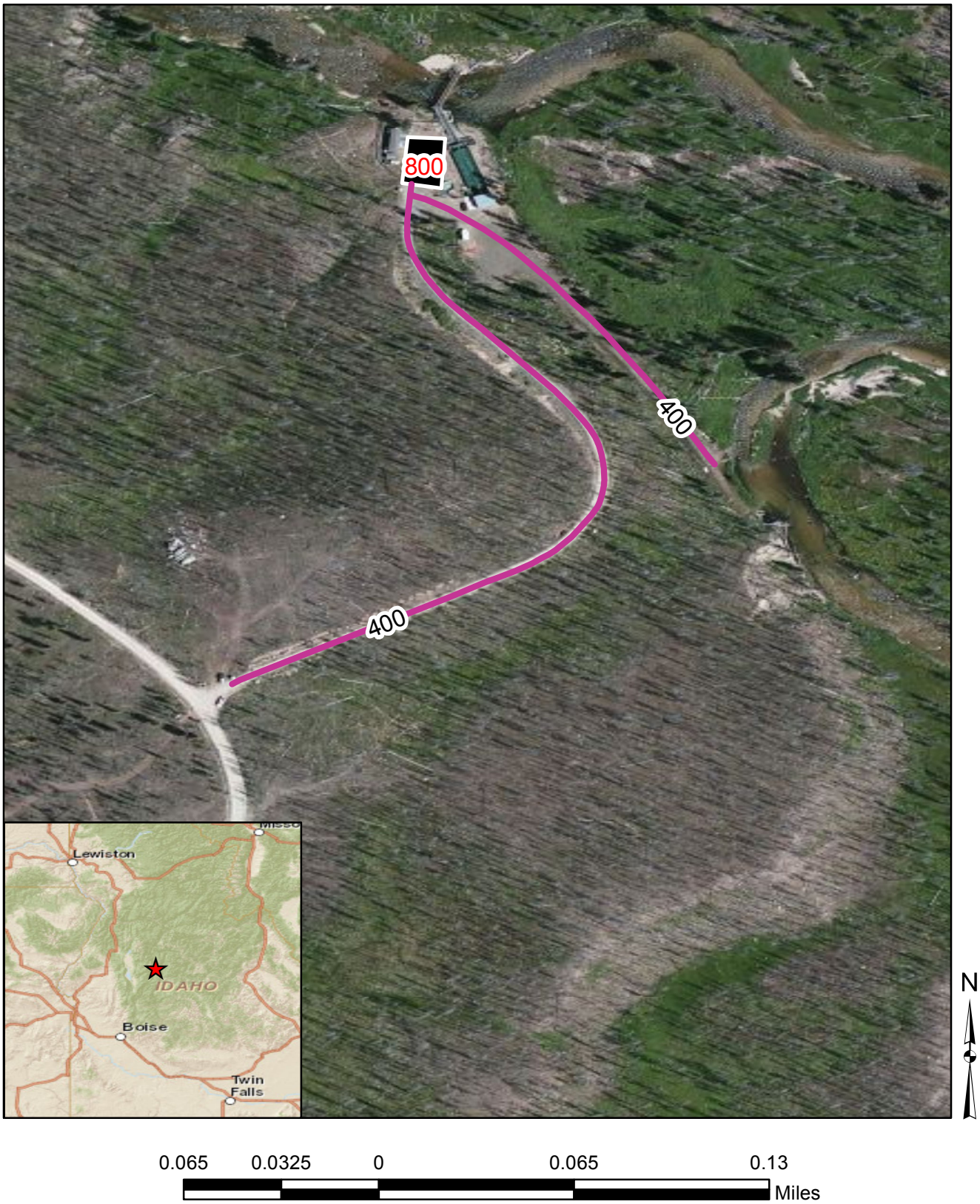
**Road Condition Rating: Public/Administrative Use**

| USE TYPE | Excellent | | Good | | Fair | | Poor | | Failed | | TOTAL MILES |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | MILES | % | MILES | % | MILES | % | MILES | % | MILES | % | |
| **Public (FC I-III)** | 0.00 | 0.0% | 0.00 | 0.0% | 0.00 | 0.0% | 0.00 | 0.0% | 0.00 | 0.0% | 0.00 |
| **Admin (FC IV-V)** | 0.00 | 0.0% | 0.35 | 100.0% | 0.00 | 0.0% | 0.00 | 0.0% | 0.00 | 0.0% | 0.35 |
| **Totals** | **0.00** | **0.0%** | **0.35** | **100.0%** | **0.00** | **0.0%** | **0.00** | **0.0%** | **0.00** | **0.0%** | **0.35** |

**Parking Condition Rating: Public/Administrative Use**

| USE TYPE | Excellent | | Good | | Fair | | Poor | | Failed | | Total Sq Ft |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sq Ft | % | Sq Ft | % | Sq Ft | % | Sq Ft | % | Sq Ft | % | |
| **Public** | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 |
| **Admin** | 0 | 0.0% | 4083 | 100.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 4,083 |
| **Totals** | **0** | **0.0%** | **4,083** | **100.0%** | **0** | **0.0%** | **0** | **0.0%** | **0** | **0.0%** | **4,083** |

# South Fork Salmon River NFH
# Route Location Map



# South Fork Salmon River - 14271
## Route Identification List

| Shading Color Key: | |
|---|---|
| | White = Paved Routes |
| | Yellow = Unpaved Routes |

| RTE # | Asset Number | ROUTE NAME | RTE MI | ROUTE DESCRIPTION | PAVED MI | UN-PAVED MI | LANES | FC |
|---|---|---|---|---|---|---|---|---|
| 400 | 10055998 | Entrance Road | 0.35 | From .75 Miles North of Warm Lake Road to river access | - | 0.35 | 1 | 5 |
| | | | | | | | | |

* Route has more than one Asset Number

# South Fork Salmon River - 14271

## Route Identification List (Parking)

| Shading Color Key: | |
|---|---|
| | White = Paved Routes |
| | Green = Unpaved Routes |

| Route # | Asset Number | ROUTE NAME | Area (Sq Ft) | ROUTE DESCRIPTION | Surface Type |
|---|---|---|---|---|---|
| 800 | 10005054 | Intake Parking | 4,083 | From Entrance Road (Route 400) | Gravel |

**CHANGES TO THE FISH AND WILDLIFE SERVICE ROAD INVENTORY REPORT**

**South Fork Salmon River NFH**

| Routes added to previous inventory: | | |
|---|---|---|
| **Rte #** | **Rte Name** | **Reason For Addition** |
| 800 | Intake Parking | New Administrative Route |
| 400 | Entrance Road | New Administrative Route |

| Routes removed from previous inventory: | | |
|---|---|---|
| **Rte #** | **Rte Name** | **Reason For Removal** |

| Routes modified from previous inventory: | | | |
|---|---|---|---|
| **Rte #** | **Rte Name** | **Type of Modification** | **Description of Modification** |

**Comments:**

## Entrance Road

From .75 Miles North of Warm Lake Road to river access

Route Number: 400

Total Route Mileage: 0.35

| | | | | | |
|---|---|---|---|---|---|
| **Asset Number** | 10055998 | 10055998 | | | |
| **Section Number** | 001 | 002 | | | |
| **Section Length (miles)** | 0.23 | 0.12 | | | |
| **Inspection Date** | 10-02-2012 | 10-02-2012 | | | |
| **Surface Type** | Gravel | Gravel | | | |
| **Number of Lanes** | 1 | 1 | | | |
| **Roadway Width (feet)** | 14 | 8 | | | |
| **Condition** | Good | Good | | | |
| **Remaining Service Life (years)** | 7 | 7 | | | |
| **Estimated Cost to Repair** | $400 | $200 | | | |
| **Current Replacement Value** | $173,600 | $88,800 | | | |

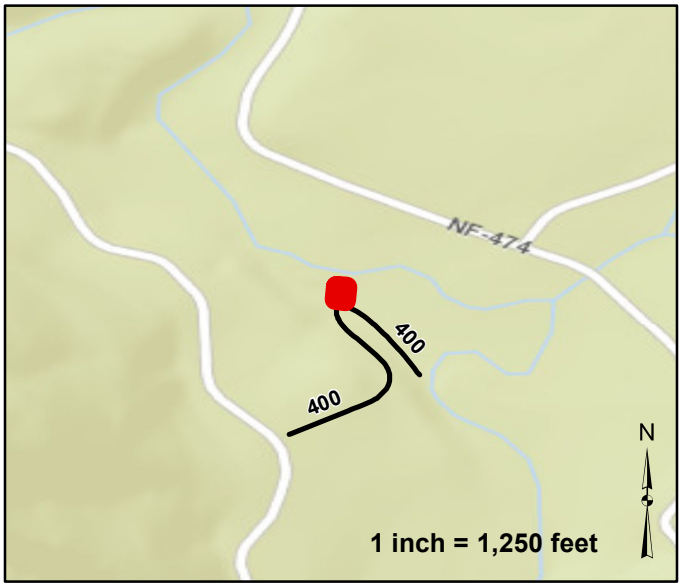
| Features | Mile Post | Features | Mile Post | Features | Mile Post | Features | Mile Post |
|---|---|---|---|---|---|---|---|
| Begin Section | 001-0.0 | | | | | | |
| Gate | 001-0.0 | | | | | | |
| Gate | 001-0.23 | | | | | | |
| Turnout/Parking | 001-0.23 | | | | | | |
| Begin Section | 002-0.23 | | | | | | |
| Turnout/Parking | 002-0.25 | | | | | | |

# Route Number: 800

## Intake Parking

### From Entrance Road (Route 400)

| Asset Number | Area (Sq Ft) | Spaces | Condition | Surface Type | Cost to Improve | Inspection Date | Current Replacement Value |
|---|---|---|---|---|---|---|---|
| 10005054 | 4083 | 5 | Good | Gravel | $700 | 10-02-2012 | $22,200 |




Parking

900

Other FWS roads

**Features**

- Gate
- Admin Bldg
- Begin Section
- Boat Ramp
- Guardrail
- Fee Station
- Visitor Center
- Other
- Problem Area
- Culvert
- Low_Water_Crossing
- Water_Control_Structure

**Condition:**

- Excellent
- Good
- Fair
- Poor
- Failed

| South Fork Salmon River - 14271 Bridge Inventory | | | | | |
|---|---|---|---|---|---|
| Rte # | Milepost | NBIS # | Sufficiency Rating | Functionally Obsolete | Structurally Deficient |
| No Bridges to report | | | | | |

**ROUTE: 400**

# Features Photographs

Photo: SOFO_C4_0080 Route: 400-001-0.0
Begin Section

Photo: SOFO_C4_0081 Route: 400-001-0.0
Metal Open Rail Gate

Photo: SOFO_C4_0083 Route: 400-001-0.23
Metal Chain Link Gate

Photo: SOFO_C4_0082 Route: 400-002-0.23
Begin Section

## Accident Summary

| Number of Accidents Reported | Timespan of Accidents | Injuries | Fatalities |
|---|---|---|---|
| 0 | No Accidents to Report | 0 | 0 |

# APPENDIX

| FWS ROAD FUNCTIONAL CLASSIFICATION | |
|---|---|
| **Class I** | Principal Refuge Road (Public Roads) - Routes that constitute the main access route, main auto tour route, or thoroughfare for refuge visitors. These routes are accessible by 2WD vehicles. Routes are numbered from 10 to 99. |
| **Class II** | Connector Refuge Road (Public Roads) - Routes that provide circulation within the refuge. These routes can also provide access to areas of scenic, scientific, recreational or cultural interest, such as overlooks, campgrounds, education centers, etc. These routes are accessible by 2WD vehicles. Routes are numbered from 100 to 199. |
| **Class III** | Special Purpose Refuge Road (Public Roads) - Roads that provide circulation within special use areas such as campgrounds or public concessionaire facilities or access to remote areas of the refuge. These routes may not be 2WD accessible. Routes are numbered from 200 to 299 |
| **Class IV** | Administrative Access Road (Administrative Roads) - Routes intended for access to administrative developments or structures such as maintenance offices, employee quarters, or utility areas. These routes are accessible by 2WD vehicles. These routes may restrict access to the general public. Routes are numbered from 300 to 399. |
| **Class V** | Restricted Road (Administrative Roads) - Routes normally closed to the public, such as maintenance roads, service roads, patrol roads, and fire breaks. These routes may be open to the public for a short period of time for a special use, such as hunting access. These routes may not be 2WD accessible. Routes are numbered from 400 to 499. |

A refuge road system contains those routes within or giving access to a refuge or other unit of the FWS that are administered by the FWS, or by the Service in cooperation with other agencies. The assignment of a functional classification (FC) to a refuge road is not based on traffic volumes or design speed, but on the intended use or function of that route.

# DESCRIPTION OF RATING SYSTEM

Rating Data is collected on five different surface types: Asphalt, Concrete, Gravel, Native Improved and Native Primitive. The Utah LTAP Center's Remaining Service Life (RSL) system is used for all surface types. The RSL system is based on the Strategic Highway Research Program's (SHRP) Distress Identification Manual.

## Asphalt Rating System

Data is collected on the following distresses and conditions:

- **Fatigue Cracking -** Interconnected cracks forming small irregular shapes.
- **Longitudinal Cracking -** Cracks running parallel with the roadway, in the direction of traffic.
- **Transverse Cracking -** Cracks perpendicular to the roadway, going across the lane or lanes.
- **Block Cracking -** Interconnected cracks forming large blocks.
- **Edge Cracking –** Cracks running along the edge of the pavement surface.
- **Patches -** Original surface repaired with new asphalt patch material.
- **Potholes -** Holes or depressions in the pavement.
- **Rutting -** surface depressions in the wheel paths.
- **Roughness –** Evenness of pavement for serviceability.
- **Drainage** – Ability of the road surface to drain water based on proper slope.

A Condition Rating value is calculated for each homogenous pavement section, and can be up to 1 mile in length.

**Rating Index Formula**

Fatigue, longitudinal, transverse, block, and edge cracking, along with patching and potholes are rated on a 0 - 9 scale (0 = no distress, 9 = maximum distress). The rating given is based on the extent and the severity of the distress. Rutting, roughness, and drainage are rated on a 0 - 3 scale (0 = excellent, 3 = poor). Each distress type has a given Remaining Service Life (RSL) value (in years) based on the rating for that distress. The distress rating resulting in the lowest RSL value is considered to be the governing distress. That value is assigned as the RSL of the road segment.

## Concrete Rating System

Data is collected on the following distresses and conditions:

- **Spalling of Joints** – Chipping, breaking, or cracking of slab edges
- **Joint Seal Damage** – Any damage or condition that enables materials or water to infiltrate into the joint from the surface.
- **Corner Breaks** – A portion of the slab separated by a crack that intersects the adjacent transverse and longitudinal joints, forming approximately a 45° angle to the direction.
- **Broken Slabs** – Faulting and/or cracking localized to individual slabs.
- **Faulting** – Difference in elevation across a crack or joint.
- **Longitudinal Cracking** – Cracks in the pavement running parallel to road.

- **Transverse Cracking -** Cracks in the pavement running perpendicular to the direction of traffic.
- **Patch Deterioration** – Faulting, settling, or cracking of previously placed patch
- **Map Cracking** – A series of cracks that extend only into the upper surface of the Slab

A Condition Rating value is calculated for each homogenous pavement section, and can be up to 1 mile in length.

**Rating Index Formula**
The rating procedure for concrete pavement is the same as that for asphalt pavement described previously. Each of the distresses described above are rated on the same 0 – 9 scale. The governing distress is then determined and the RSL associated with that distress is assigned to the road segment.

## Gravel and Native Improved Rating System

Data is collected on the following distresses and conditions:
- **Cross Section (Gravel, Native Improved only) -** Roadway built so that the center is higher than the
shoulder, to prevent water from pooling on roadway.
- **Roadside Drainage (Gravel, Native Improved only) -** Roadside ditches and culverts to handle water flow and
prevent pooling on the roadside.
- **Corrugations (Washboarding) -** Small trenches or holes developing perpendicular to the roadway.
- **Potholes -** Holes or depressions in the roadway.
- **Rutting -** Depressions running parallel with the roadway, in the wheelpaths.
- **Dust -** Amount of dust caused by traffic.
- **Loose Aggregate (Gravel Only) -** Loose gravel, typically piled up on the roadway edges or centerline.

A Condition Rating value is calculated for each homogenous pavement section, and can be up to 1 mile in length.

**Rating Index Formula**
The rating procedure for unpaved roads is the same as that for asphalt and concrete pavements described previously. Of the distresses described above, corrugations, potholes, rutting, and loose aggregate are rated on the same 0 – 9 scale previously mentioned. Cross section, roadside drainage, and dust are rated on the same 0 – 3 scale described for asphalt pavement. The governing distress is then determined and the RSL associated with that distress is assigned to the road segment.

## Condition Descriptions by Surface Type

The following definitions are used to describe pavement condition for the various surface types. These are general guidelines for condition indications.

## Asphalt

**Excellent** – Recently constructed or overlaid road where construction or overlay was performed correctly- No maintenance required. RSL = 19-20 years.

**Good** – Low extent longitudinal and transverse cracks. All cracks are 1/4" or less with little or no crack erosion. Patches are in good condition and applied correctly. Routine Maintenance recommended. RSL = 13-18 years.

**Fair** - Roads are in good structural condition with little or no fatigue cracking. Longitudinal, transverse, and edge cracking is at medium extent and severity. Block cracking is not extensive. Any patches are in good condition. Preventative maintenance recommended. RSL = 7-12 years.

**Poor** - Road beginning to show signs of structural distress. Fatigue cracking is medium to high extent and medium severity. Cracking will be severe. Surface may have severe block cracking and show. Patches are in fair to poor condition. There is moderate distortion or rutting and occasional potholes. Rehabilitation recommended. RSL = 1-6 years.

**Failed** - Road is severely deteriorated. Signs of structural failure appear along with severe and extensive fatigue cracking, distortion, potholes, or extensive patches in poor condition. Reconstruction recommended. RSL = 0 years.

## Concrete

**Excellent** - New pavement. No maintenance required. RSL = 19-20 years

**Good** - First signs of transverse cracking, patch or repair, more extensive pop-outs, or scaling. Sealing or routine maintenance recommended. RSL = 13-18 years.

**Fair** – Pavement has join or crack spalling, and/or faulting, along with cracking at corners with broken pieces. Any Patches are in fair condition and faulting is at a minimum. Preventative maintenance recommended. RSL = 7-12 years.

**Poor** - Joints and cracks are open 1 inch, spalled, or patched. Faulting is more severe. Rehabilitation recommended. RSL = 1-6 years.

**Failed** - Most slabs have failed structurally, and faulting is severe. Reconstruction recommended. RSL = 0 years.11-9

The following table shows the relationship between RSL and condition.

| SUBJECTIVE CONDITION RATING FOR REMAINING SERVICE LIFE (Asphalt and Concrete Pavements) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | FAILED | POOR | | FAIR | | GOOD | | EXCELLENT |
| RSL Years | 0 | 1-3 | 4-6 | 7-9 | 10-12 | 13-15 | 16-18 | 19-20 |

## Gravel and Native

**Excellen**t - Newly constructed road that has been constructed properly with proper crown, drainage and gravel layer. Little or no distress. No maintenance recommended. RSL = 8-10 years.

**Good** - Crown, drainage provisions, and gravel layer are in good condition. Distress limited to traffic effects such as dust, loose aggregate, and low severity corrugations (wash boarding). RSL = 5-7 years.

**Fair** - Adequate drainage and crown through majority of roadway. Crown repair, ditch improvement may be necessary. Road has more severe corrugations and potholes. Preventative maintenance recommended. RSL = 3-4 years.

**Poor** - Travel at slow speeds is necessary. Additional gravel layer needed to carry traffic. Poor crown. Ditching is inadequate and rutting is extensive and severe. Rehabilitation recommended. RSL = 1-2 years.

**Failed** - Travel is difficult, and road may be closed at times. Rutting and Corrugations are very severe. Total Reconstruction of road is recommended. RSL = 0 years.

The following table shows the RSL values for gravel and native roads in terms of excellent,good, fair, poor, and failed condition.

| SUBJECTIVE CONDITION RATING FOR REMAINING SERVICE LIFE (Gravel and Native Surfaces) | | | | | |
|---|---|---|---|---|---|
| | FAILED | POOR | FAIR | GOOD | EXCELLENT |
| RSL Years | 0 | 1-2 | 3-4 | 5-7 | 8-10 |

# NATIVE PRIMITIVE/IMPROVED RATING SHEET

## Cross Section (Crown)*

| Severity | Condition | | Description |
|---|---|---|---|
| | No Defects | 0 | Crown 4-6" with no restriction of water flow from centerline to ditch. |
| | Minor Defects | 1 | Inadequate or inconsistent crown. Drainage to ditch may be restricted. |
| | Moderate Defects | 2 | Flat crown, drainage to ditch restricted. |
| | Major Defects | 3 | Reverse crown, bowl-shaped road, drainage on roadway |

## Rutting

| Severity | No Defects | Extent (Length) Low <10% | Med 10-30% | High >30% |
|---|---|---|---|---|
| | Low < 6" | 1 | 2 | 3 |
| | Med 6-12" | 4 | 5 | 6 |
| | High > 12" | 7 | 8 | 9 |

## Roadside Drainage*

| Severity | Condition | | Description |
|---|---|---|---|
| | No Defects | 0 | Wide, deep ditches (>4') with no restriction to water flow. |
| | Minor Defects | 1 | Adequate ditches (>2' deep), minor obstructions restrict water flow. |
| | Moderate Defects | 2 | Shallow, narrow and obstructed ditches. Minor erosion of road. |
| | Major Defects | 3 | No ditch, drainage on roadway with moderate to severe erosion. |

## Potholes

| Severity | No Defects | Extent (Area) Low <10% | Med 10-30% | High >30% |
|---|---|---|---|---|
| | Low < 6" | 1 | 2 | 3 |
| | Med 6-12" | 4 | 5 | 6 |
| | High > 12" | 7 | 8 | 9 |

## Dust

| Severity | Condition | | Description |
|---|---|---|---|
| | No Defects | 0 | No obstruction to sight distance. |
| | Minor Defects | 1 | Sight distance > 550' |
| | Moderate Defects | 2 | Sight distance 225'-550' |
| | Major Defects | 3 | Sight distance < 225' |

## Corrugations

| Severity | No Defects | Extent (Length) Low <10% | Med 10-30% | High >30% |
|---|---|---|---|---|
| | Low < 3" | 1 | 2 | 3 |
| | Med 3-6" | 4 | 5 | 6 |
| | High > 6" | 7 | 8 | 9 |

* Crown and Drainage are not rated for roads that have no constructed crown or drainage. This applies to Native and Gravel roads.

# GRAVEL RATING SHEET

## Cross Section (Crown)

| Severity | Condition | | Description |
|---|---|---|---|
| | No Defects | 0 | Crown 4-6" with no restriction of water flow from centerline to ditch. |
| | Minor Defects | 1 | Inadequate or inconsistent crown. Drainage to ditch may be restricted. |
| | Moderate Defects | 2 | Flat crown, drainage to ditch restricted. |
| | Major Defects | 3 | Reverse crown, bowl-shaped road, drainage on roadway |

## Rutting

| Severity | No Defects | Extent (Length) Low <10% | Med 10-30% | High >30% |
|---|---|---|---|---|
| | Low < 1" | 1 | 2 | 3 |
| | Med 1-3" | 4 | 5 | 6 |
| | High > 3" | 7 | 8 | 9 |

## Roadside Drainage

| Severity | Condition | | Description |
|---|---|---|---|
| | No Defects | 0 | Wide, deep ditches (>4') with no restriction to water flow. |
| | Minor Defects | 1 | Adequate ditches (>2' deep), minor obstructions restrict water flow. |
| | Moderate Defects | 2 | Shallow, narrow and obstructed ditches. Minor erosion of road. |
| | Major Defects | 3 | No ditch, drainage on roadway with moderate to severe erosion. |

## Potholes

| Severity | No Defects | Extent (Area) Low <10% | Med 10-30% | High >30% |
|---|---|---|---|---|
| | Low < 1" | 1 | 2 | 3 |
| | Med 1-3" | 4 | 5 | 6 |
| | High > 3" | 7 | 8 | 9 |

## Dust

| Severity | Condition | | Description |
|---|---|---|---|
| | No Defects | 0 | No obstruction to sight distance. |
| | Minor Defects | 1 | Sight distance > 550' |
| | Moderate Defects | 2 | Sight distance 225'-550' |
| | Major Defects | 3 | Sight distance < 225' |

## Corrugations

| Severity | No Defects | Extent (Length) Low <10% | Med 10-30% | High >30% |
|---|---|---|---|---|
| | Low < 2" | 1 | 2 | 3 |
| | Med 2-4" | 4 | 5 | 6 |
| | High > 4" | 7 | 8 | 9 |

* Crown and Drainage are not rated for roads that have no constructed crown or drainage. This applies to Native and Gravel roads.

## Loose Aggregate

| Severity | No Defects | Extent (Area) Low <10% | Med 10-30% | High >30% |
|---|---|---|---|---|
| | Low < 1" | 1 | 2 | 3 |
| | Med 1-3" | 4 | 5 | 6 |
| | High > 3" | 7 | 8 | 9 |

# ASPHALT RATING SHEET

## Fatigue Cracking

| Severity | Extent: Low 1 crack WP | Extent: Med 2 cracks WP | Extent: High >30% length |
|---|---|---|---|
| Low-Cracks < 1/4" | 1 | 2 | 3 |
| Med-Cracks 1/4-3/4" | 4 | 5 | 6 |
| High-Cracks > 3/4" | 7 | 8 | 9 |

## Edge Cracking

| Severity | Extent (Length): Low <10% | Extent (Length): Med 10-30% | Extent (Length): High >30% |
|---|---|---|---|
| 0-6" from curb | 1 | 2 | 3 |
| 6-18" from curb | 4 | 5 | 6 |
| > 18" from curb | 7 | 8 | 9 |

## Longitudinal Cracking

| Severity | Extent: Low 1 crack full length | Extent: Med 2 cracks full length | Extent: High >2 cracks full length |
|---|---|---|---|
| Low-Cracks < 1/4" | 1 | 2 | 3 |
| Med-Cracks 1/4-3/4" | 4 | 5 | 6 |
| High-Cracks > 3/4" | 7 | 8 | 9 |

## Block Cracking

| Severity | Extent (Length): Low > 15x15' squares | Extent (Length): Med 15-10' squares | Extent (Length): High <10x10' squares |
|---|---|---|---|
| Low-Cracks < 1/4" | 1 | 2 | 3 |
| Med-Cracks 1/4-3/4" | 4 | 5 | 6 |
| High-Cracks > 3/4" | 7 | 8 | 9 |

## Transverse Cracking

| Severity | Extent (ft between cracks): Low > 200' | Extent (ft between cracks): Med 200-50' | Extent (ft between cracks): High < 50' |
|---|---|---|---|
| Low-Cracks < 1/4" | 1 | 2 | 3 |
| Med-Cracks 1/4-3/4" | 4 | 5 | 6 |
| High-Cracks > 3/4" | 7 | 8 | 9 |

## Utility Cuts

| Severity | Extent (Length): Low <10% | Extent (Length): Med 10-30% | Extent (Length): High >30% |
|---|---|---|---|
| Low-Cracks < 1/4" | 1 | 2 | 3 |
| Med-Cracks 1/4-3/4" | 4 | 5 | 6 |
| High-Cracks > 3/4" | 7 | 8 | 9 |

## Drainage/Roughness/Rutting

| Condition | Severity | Description |
|---|---|---|
| No Defects | 0 | Wide, deep ditches with no obstructions, smooth ride, no rutting, no potholes. |
| Minor Defects | 1 | Drainage may be obstructed, < 1" rutting, minor roughness. |
| Moderate Defects | 2 | Poor drainage, 1-2" rutting, noticeable roughness, potholes < 6" wide. |
| Major Defects | 3 | No drainage; > 2" rutting; potholes 6-12" wide create roughness requiring reduced speeds. |

# CONCRETE RATING SHEET

## Spalling of Joints

**Extent** (% joints)

| Severity | No Defects | Low <10% | Med 10-20% | High >20% |
|---|---|---|---|---|
| | Low Spalls < 3" | 1 | 2 | 3 |
| | Med Spalls 3-6" | 4 | 5 | 6 |
| | High Spalls > 6" | 7 | 8 | 9 |

## Broken Slabs

**Extent** (% slabs)

| Severity | No Defects | Low <5% | Med 5-15% | High >15% |
|---|---|---|---|---|
| | Low-no more than 3 pieces, no spalling/faulting | 1 | 2 | 3 |
| | Med-broken into >3 pieces, spalling/faulting <1/4" | 4 | 5 | 6 |
| | High-4 or more pieces, spalling/faulting >1/4" | 7 | 8 | 9 |

## Transverse Cracks

**Extent** (% slabs)

| Severity | No Defects | Low <10% | Med 10-20% | High >20% |
|---|---|---|---|---|
| | Low-Cracks < 1/8"; no spalling/faulting | 1 | 2 | 3 |
| | Med-Cracks 1/8-1/2"; spall <3", fault >1/4" | 4 | 5 | 6 |
| | High-Cracks > 1/2"; spall >3", fault >1/4" | 7 | 8 | 9 |

## Joint Seal Damage

**Extent** (%joints)

| Severity | No Defects | Low <10% | Med 10-20% | High >20% |
|---|---|---|---|---|
| | Low <10% joint length | 1 | 2 | 3 |
| | Med 10-50% joint length | 4 | 5 | 6 |
| | High >50% joint length | 7 | 8 | 9 |

## Faulting

**Extent** (Length)

| Severity | No Defects | Low <10% | Med 10-30% | High >30% |
|---|---|---|---|---|
| | Low < 1/2" | 1 | 2 | 3 |
| | Med 1/2-1" | 4 | 5 | 6 |
| | High > 1" | 7 | 8 | 9 |

## Patch Deterioration

**Extent** (Area)

| Severity | No Defects | Low <10% | Med 10-30% | High >30% |
|---|---|---|---|---|
| | Low-no fault, no settle at perimeter | 1 | 2 | 3 |
| | Med-fault & settle <1/4" at perimeter | 4 | 5 | 6 |
| | High-fault & settle >1/4" at perimeter, cracked patch | 7 | 8 | 9 |

## Corner Breaks

**Extent** (% of slabs)

| Severity | No Defects | Low <10% | Med 10-20% | High >20% |
|---|---|---|---|---|
| | Low-corner cracks, no spalling or faulting | 1 | 2 | 3 |
| | Med-crack slightly spalled & faulted <1/4" | 4 | 5 | 6 |
| | High-crack highly spalled & faulted >1/4" | 7 | 8 | 9 |

## Longitudinal Cracks

**Extent** (% slabs)

| Severity | No Defects | Low <10% | Med 10-20% | High >20% |
|---|---|---|---|---|
| | Low-Cracks < 1/8"; no spalling/faulting | 1 | 2 | 3 |
| | Med-Cracks 1/8-1/2"; spall <3", fault >1/2" | 4 | 5 | 6 |
| | High-Cracks > 1/2"; spall >3", fault >1/2" | 7 | 8 | 9 |

## Map Cracks

**Extent** (Area)

| Severity | No Defects | Low <10% | Med 10-20% | High >20% |
|---|---|---|---|---|
| | Low-small connected cracks, no spalling | 1 | 2 | 3 |
| | Med-connected cracks, no spalling | 4 | 5 | 6 |
| | High-large connected cracks with surface spalling | 7 | 8 | 9 |

# Deficiency Ratings With Associated Remaining Service Life

## Asphalt Rating Sheet

| Fatigue Cracking | |
|---|---|
| Distress Rating | Remaining Service Life |
| 0 | 20 |
| 1 | 10 |
| 2 | 8 |
| 3 | 6 |
| 4 | 8 |
| 5 | 6 |
| 6 | 4 |
| 7 | 6 |
| 8 | 2 |
| 9 | 0 |

| Edge Cracking | |
|---|---|
| Distress Rating | Remaining Service Life |
| 0 | 20 |
| 1 | 12 |
| 2 | 10 |
| 3 | 8 |
| 4 | 10 |
| 5 | 8 |
| 6 | 6 |
| 7 | 8 |
| 8 | 6 |
| 9 | 4 |

| Transverse Cracking | |
|---|---|
| Distress Rating | Remaining Service Life |
| 0 | 20 |
| 1 | 14 |
| 2 | 12 |
| 3 | 10 |
| 4 | 12 |
| 5 | 10 |
| 6 | 8 |
| 7 | 10 |
| 8 | 6 |
| 9 | 2 |

| Utility Cuts | |
|---|---|
| Distress Rating | Remaining Service Life |
| 0 | 20 |
| 1 | 14 |
| 2 | 12 |
| 3 | 10 |
| 4 | 12 |
| 5 | 10 |
| 6 | 8 |
| 7 | 10 |
| 8 | 6 |
| 9 | 2 |

| Longitudinal Cracking | |
|---|---|
| Distress Rating | Remaining Service Life |
| 0 | 20 |
| 1 | 14 |
| 2 | 12 |
| 3 | 10 |
| 4 | 12 |
| 5 | 10 |
| 6 | 8 |
| 7 | 10 |
| 8 | 8 |
| 9 | 6 |

| Block Cracking | |
|---|---|
| Distress Rating | Remaining Service Life |
| 0 | 20 |
| 1 | 12 |
| 2 | 10 |
| 3 | 8 |
| 4 | 10 |
| 5 | 8 |
| 6 | 6 |
| 7 | 12 |
| 8 | 6 |
| 9 | 2 |

| Drainage/Roughness/Rutting | |
|---|---|
| Distress Rating | Remaining Service Life |
| 0 | 20 |
| 1 | 16 |
| 2 | 10 |
| 3 | 4 |

**SUBJECTIVE CONDITION RATING FOR REMAINING SERVICE LIFE IN YEARS (Asphalt & Concrete Roads)**

| RSL | FAILED 0 | POOR 1 - 6 | FAIR 7 - 12 | GOOD 13 - 18 | EXCELLENT 19 - 20 |
|---|---|---|---|---|---|

## Concrete Rating Sheet

| Spalling | |
|---|---|
| Distress Rating | Remaining Service Life |
| 0 | 20 |
| 1 | 15 |
| 2 | 12 |
| 3 | 10 |
| 4 | 12 |
| 5 | 10 |
| 6 | 8 |
| 7 | 10 |
| 8 | 6 |
| 9 | 0 |

| Broken Slabs | |
|---|---|
| Distress Rating | Remaining Service Life |
| 0 | 20 |
| 1 | 15 |
| 2 | 12 |
| 3 | 10 |
| 4 | 12 |
| 5 | 10 |
| 6 | 8 |
| 7 | 10 |
| 8 | 6 |
| 9 | 0 |

| Transverse Cracks | |
|---|---|
| Distress Rating | Remaining Service Life |
| 0 | 20 |
| 1 | 18 |
| 2 | 15 |
| 3 | 12 |
| 4 | 15 |
| 5 | 10 |
| 6 | 6 |
| 7 | 10 |
| 8 | 4 |
| 9 | 0 |

| Joint Seal Damage | |
|---|---|
| Distress Rating | Remaining Service Life |
| 0 | 20 |
| 1 | 16 |
| 2 | 14 |
| 3 | 12 |
| 4 | 14 |
| 5 | 10 |
| 6 | 8 |
| 7 | 12 |
| 8 | 8 |
| 9 | 6 |

| Faulting | |
|---|---|
| Distress Rating | Remaining Service Life |
| 0 | 20 |
| 1 | 15 |
| 2 | 12 |
| 3 | 10 |
| 4 | 12 |
| 5 | 8 |
| 6 | 6 |
| 7 | 10 |
| 8 | 4 |
| 9 | 0 |

| Patch Deterioration | |
|---|---|
| Distress Rating | Remaining Service Life |
| 0 | 18 |
| 1 | 16 |
| 2 | 14 |
| 3 | 12 |
| 4 | 12 |
| 5 | 10 |
| 6 | 8 |
| 7 | 10 |
| 8 | 6 |
| 9 | 0 |

| Corner Breaks | |
|---|---|
| Distress Rating | Remaining Service Life |
| 0 | 18 |
| 1 | 16 |
| 2 | 14 |
| 3 | 12 |
| 4 | 12 |
| 5 | 10 |
| 6 | 8 |
| 7 | 10 |
| 8 | 6 |
| 9 | 0 |

| Longitudinal Cracks | |
|---|---|
| Distress Rating | Remaining Service Life |
| 0 | 20 |
| 1 | 18 |
| 2 | 15 |
| 3 | 12 |
| 4 | 15 |
| 5 | 10 |
| 6 | 6 |
| 7 | 10 |
| 8 | 4 |
| 9 | 0 |

| Map Cracks | |
|---|---|
| Distress Rating | Remaining Service Life |
| 0 | 20 |
| 1 | 18 |
| 2 | 15 |
| 3 | 12 |
| 4 | 12 |
| 5 | 10 |
| 6 | 6 |
| 7 | 10 |
| 8 | 4 |
| 9 | 0 |

# Deficiency Ratings With Associated Remaining Service Life

## Native Primitive Improved Rating Sheet

| Cross Section | |
|---|---|
| Distress Rating | Remaining Service Life |
| 0 | 10 |
| 1 | 7 |
| 2 | 5 |
| 3 | 0 |

| Rutting | |
|---|---|
| Distress Rating | Remaining Service Life |
| 0 | 10 |
| 1 | 9 |
| 2 | 7 |
| 3 | 5 |
| 4 | 7 |
| 5 | 4 |
| 6 | 3 |
| 7 | 4 |
| 8 | 2 |
| 9 | 0 |

| Roadside Drainage | |
|---|---|
| Distress Rating | Remaining Service Life |
| 0 | 10 |
| 1 | 8 |
| 2 | 4 |
| 3 | 0 |

| Potholes | |
|---|---|
| Distress Rating | Remaining Service Life |
| 0 | 10 |
| 1 | 9 |
| 2 | 7 |
| 3 | 5 |
| 4 | 7 |
| 5 | 4 |
| 6 | 3 |
| 7 | 4 |
| 8 | 2 |
| 9 | 0 |

| Dust | |
|---|---|
| Distress Rating | Remaining Service Life |
| 0 | 10 |
| 1 | 8 |
| 2 | 6 |
| 3 | 2 |

| Corrugations | |
|---|---|
| Distress Rating | Remaining Service Life |
| 0 | 10 |
| 1 | 9 |
| 2 | 7 |
| 3 | 7 |
| 4 | 6 |
| 5 | 5 |
| 6 | 5 |
| 7 | 4 |
| 8 | 3 |
| 9 | 0 |

**SUBJECTIVE CONDITION RATING FOR REMAINING SERVICE LIFE IN YEARS (Gravel & Native Roads)**

| | | | | | |
|---|---|---|---|---|---|
| RSL | FAILED 0 | POOR 1 - 2 | FAIR 3 - 4 | GOOD 5 - 7 | EXCELLENT 8 - 10 |

## Gravel Rating Sheet

| Cross Section | |
|---|---|
| Distress Rating | Remaining Service Life |
| 0 | 10 |
| 1 | 7 |
| 2 | 5 |
| 3 | 0 |

| Rutting | |
|---|---|
| Distress Rating | Remaining Service Life |
| 0 | 10 |
| 1 | 9 |
| 2 | 7 |
| 3 | 5 |
| 4 | 7 |
| 5 | 4 |
| 6 | 3 |
| 7 | 4 |
| 8 | 2 |
| 9 | 0 |

| Roadside Drainage | |
|---|---|
| Distress Rating | Remaining Service Life |
| 0 | 10 |
| 1 | 8 |
| 2 | 4 |
| 3 | 0 |

| Potholes | |
|---|---|
| Distress Rating | Remaining Service Life |
| 0 | 10 |
| 1 | 9 |
| 2 | 7 |
| 3 | 5 |
| 4 | 7 |
| 5 | 4 |
| 6 | 3 |
| 7 | 4 |
| 8 | 2 |
| 9 | 0 |

| Dust | |
|---|---|
| Distress Rating | Remaining Service Life |
| 0 | 10 |
| 1 | 8 |
| 2 | 6 |
| 3 | 2 |

| Corrugations | |
|---|---|
| Distress Rating | Remaining Service Life |
| 0 | 10 |
| 1 | 9 |
| 2 | 7 |
| 3 | 7 |
| 4 | 6 |
| 5 | 5 |
| 6 | 5 |
| 7 | 4 |
| 8 | 3 |
| 9 | 0 |

| Loose Aggregate | |
|---|---|
| Distress Rating | Remaining Service Life |
| 0 | 10 |
| 1 | 9 |
| 2 | 8 |
| 3 | 7 |
| 4 | 8 |
| 5 | 7 |
| 6 | 6 |
| 7 | 5 |
| 8 | 3 |
| 9 | 0 |