

VOLUME II

**4.0 ENVIRONMENTAL CONSEQUENCES..... 4.1-1**

4.1 Introduction ..... 4.1-1

4.2 Geology and Minerals..... 4.2-1

    4.2.1 Proposed Action..... 4.2-1

    4.2.2 Gold Hill Processing Alternative ..... 4.2-2

    4.2.3 County Road Overpass Alternative ..... 4.2-2

    4.2.4 No Action Alternative ..... 4.2-2

    4.2.5 Cumulative Impacts ..... 4.2-2

    4.2.6 Monitoring and Mitigation Measures ..... 4.2-3

    4.2.7 Residual Impacts ..... 4.2-3

4.3 Water Quality and Quantity (Surface and Ground) and Water Use ..... 4.3-1

    4.3.1 Proposed Action..... 4.3-1

    4.3.2 Gold Hill Process Alternative ..... 4.3-57

    4.3.3 County Road Overpass Alternative ..... 4.3-57

    4.3.4 No Action Alternative ..... 4.3-57

    4.3.5 Cumulative Impacts ..... 4.3-68

    4.3.6 Monitoring and Mitigation Measures ..... 4.3-69

    4.3.7 Residual Impacts ..... 4.3-69

4.4 Cultural Resources..... 4.4-1

    4.4.1 Proposed Action..... 4.4-1

    4.4.2 Gold Hill Processing Alternative ..... 4.4-3

    4.4.3 County Road Overpass Alternative ..... 4.4-3

    4.4.4 No Action Alternative ..... 4.4-3

    4.4.5 Cumulative Impacts ..... 4.4-3

    4.4.6 Monitoring and Mitigation Measures ..... 4.4-3

    4.4.7 Residual Impacts ..... 4.4-4

4.5 Native American Traditional Values..... 4.5-1

    4.5.1 Proposed Action..... 4.5-1

    4.5.2 Gold Hill Processing Alternative ..... 4.5-1

    4.5.3 County Road Overpass Alternative ..... 4.5-1

    4.5.4 No Action Alternative ..... 4.5-1

    4.5.5 Cumulative Impacts ..... 4.5-1

    4.5.6 Monitoring and Mitigation Measures ..... 4.5-2

    4.5.7 Residual Impacts ..... 4.5-2

## TABLE OF CONTENTS

---

4.6	Hazardous Materials and Solid Waste.....	4.6-1
4.6.1	Proposed Action.....	4.6-1
4.6.2	Gold Hill Processing Alternative .....	4.6-5
4.6.3	County Road Overpass Alternative.....	4.6-6
4.6.4	No Action Alternative .....	4.6-6
4.6.5	Cumulative Impacts .....	4.6-6
4.6.6	Monitoring and Mitigation Measures .....	4.6-6
4.6.7	Residual Effects .....	4.6-8
4.7	Air Quality.....	4.7-1
4.7.1	Proposed Action.....	4.7-1
4.7.2	Gold Hill Processing Alternative .....	4.7-6
4.7.3	County Road Overpass Alternative.....	4.7-6
4.7.4	No Action Alternative .....	4.7-6
4.7.5	Cumulative Impacts .....	4.7-6
4.7.6	Monitoring and Mitigation Measures .....	4.7-10
4.7.7	Residual Effects .....	4.7-10
4.8	Paleontological Resources.....	4.8-1
4.8.1	Proposed Action.....	4.8-1
4.8.2	Gold Hill Processing Alternative .....	4.8-1
4.8.3	County Road Overpass Alternative.....	4.8-1
4.8.4	No Action Alternative .....	4.8-1
4.8.5	Cumulative Impacts .....	4.8-1
4.8.6	Monitoring and Mitigation Measures .....	4.8-1
4.8.7	Residual Effects .....	4.8-1
4.9	Social and Economic Values.....	4.9-1
4.9.1	Proposed Action.....	4.9-6
4.9.2	Gold Hill Processing Alternative .....	4.9-18
4.9.3	County Road Overpass Alternative.....	4.9-18
4.9.4	No Action Alternative .....	4.9-19
4.9.5	Cumulative Impacts .....	4.9-20
4.9.6	Monitoring and Mitigation Measures .....	4.9-22
4.9.7	Residual Impacts .....	4.9-22
4.10	Recreation.....	4.10-1
4.10.1	Proposed Action.....	4.10-1
4.10.2	Gold Hill Processing Alternative .....	4.10-2
4.10.3	County Road Overpass Alternative.....	4.10-2
4.10.4	No Action Alternative .....	4.10-2
4.10.5	Cumulative Impacts .....	4.10-2
4.10.6	Monitoring and Mitigation Measures .....	4.10-3
4.10.7	Residual Impacts .....	4.10-3

4.11 Wilderness ..... 4.11-1

    4.11.1 Proposed Action..... 4.11-1

    4.11.2 Gold Hill Processing Alternative ..... 4.11-1

    4.11.3 County Road Overpass Alternative..... 4.11-1

    4.11.4 No Action Alternative ..... 4.11-1

    4.11.5 Cumulative Impacts ..... 4.11-2

    4.11.6 Monitoring and Mitigation Measures ..... 4.11-2

    4.11.7 Residual Adverse Impacts..... 4.11-2

4.12 Visual Resources..... 4.12-1

    4.12.1 Proposed Action..... 4.12-1

    4.12.2 Gold Hill Processing Alternative ..... 4.12-2

    4.12.3 County Road Overpass Alternative..... 4.12-2

    4.12.4 No Action Alternative ..... 4.12-3

    4.12.5 Cumulative Impacts ..... 4.12-3

    4.12.6 Monitoring and Mitigation Measures ..... 4.12-3

    4.12.7 Residual Effects ..... 4.12-3

4.13 Soils and Watershed ..... 4.13-1

    4.13.1 Proposed Action..... 4.13-1

    4.13.2 Gold Hill Processing Alternative ..... 4.13-5

    4.13.3 County Road Overpass Alternative..... 4.13-5

    4.13.4 No Action Alternative ..... 4.13-6

    4.13.5 Cumulative Impacts ..... 4.13-6

    4.13.6 Monitoring and Mitigation Measures ..... 4.13-6

    4.13.7 Residual Impacts ..... 4.13-7

4.14 Vegetation ..... 4.14-1

    4.14.1 Proposed Action..... 4.14-1

    4.14.2 Gold Hill Processing Alternative ..... 4.14-3

    4.14.3 County Road Overpass Alternative..... 4.14-3

    4.14.4 No Action Alternative ..... 4.14-3

    4.14.5 Cumulative Impacts ..... 4.14-4

    4.14.6 Monitoring and Mitigation Measures ..... 4.14-4

    4.14.7 Residual Impacts ..... 4.14-5

4.15 Noxious Weeds and Invasive Species..... 4.15-1

    4.15.1 Proposed Action..... 4.15-1

    4.15.2 Gold Hill Processing Alternative ..... 4.15-1

    4.15.3 County Road Overpass Alternative..... 4.15-1

    4.15.4 No Action Alternative ..... 4.15-2

    4.15.5 Cumulative Impacts ..... 4.15-2

    4.15.6 Monitoring and Mitigation Measures ..... 4.15-2

    4.15.7 Residual Impacts ..... 4.15-2

## TABLE OF CONTENTS

---

4.16 Range Management.....	4.16-1
4.16.1 Proposed Action.....	4.16-1
4.16.2 Gold Hill Processing Alternative .....	4.16-2
4.16.3 County Road Overpass Alternative.....	4.16-3
4.16.4 No Action Alternative .....	4.16-3
4.16.5 Cumulative Impacts .....	4.16-3
4.16.6 Monitoring and Mitigation Measures .....	4.16-4
4.16.7 Residual Impacts .....	4.16-4
4.17 Wildlife and Fisheries Resources.....	4.17-1
4.17.1 Proposed Action.....	4.17-1
4.17.2 Gold Hill Processing Alternative .....	4.17-12
4.17.3 County Road Overpass Alternative.....	4.17-12
4.17.4 No Action Alternative .....	4.17-12
4.17.5 Cumulative Impacts .....	4.17-12
4.17.6 Monitoring and Mitigation Measures .....	4.17-13
4.17.7 Residual Effects .....	4.17-14
4.18 Special Status Species.....	4.18-1
4.18.1 Proposed Action.....	4.18-1
4.18.2 Gold Hill Processing Alternative .....	4.18-8
4.18.3 County Road Overpass Alternative.....	4.18-8
4.18.4 No Action Alternative .....	4.18-8
4.18.5 Cumulative Impacts .....	4.18-9
4.18.6 Monitoring and Mitigation Measures .....	4.18-10
4.18.7 Residual Effects .....	4.18-11
4.19 Access and Land Use .....	4.19-1
4.19.1 Proposed Action.....	4.19-1
4.19.2 Gold Hill Processing Alternative .....	4.19-3
4.19.3 County Road Overpass Alternative.....	4.19-4
4.19.4 No Action Alternative .....	4.19-4
4.19.5 Cumulative Impacts .....	4.19-4
4.19.6 Monitoring and Mitigation Measures .....	4.19-4
4.19.7 Residual Impacts .....	4.19-5
4.20 Noise .....	4.20-1
4.20.1 Proposed Action.....	4.20-1
4.20.2 Gold Hill Processing Alternative .....	4.20-4
4.20.3 County Road Overpass Alternative.....	4.20-5
4.20.4 No Action Alternative .....	4.20-5
4.20.5 Cumulative Impacts .....	4.20-5
4.20.6 Monitoring and Mitigation Measures .....	4.20-5
4.20.7 Residual Impacts .....	4.20-6

4.21 Environmental Justice .....	4.21-1
4.21.1 Proposed Action.....	4.21-1
4.21.2 Gold Hill Processing Alternative .....	4.21-2
4.21.3 County Road Overpass Alternative.....	4.21-2
4.21.4 No Action Alternative .....	4.21-2
4.21.5 Cumulative Impacts .....	4.21-2
4.21.6 Monitoring and Mitigation Measures .....	4.21-2
4.21.7 Residual Impacts .....	4.21-2
4.22 Relationship Between Short-term Uses of the Human Environment and the Maintenance and Enhancement of Long-term Productivity.....	4.22-1
4.23 Irreversible and Irretrievable Commitment of Resources.....	4.23-1
<b>5.0 CONSULTATION AND COORDINATION .....</b>	<b>5-1</b>
5.1 Public Participation and Scoping .....	5-1
5.2 List of Contacts .....	5-2
5.2.1 Federal Agencies.....	5-2
5.2.2 State Agencies .....	5-3
5.2.3 Local Agencies.....	5-3
5.2.4 Tribal Organizations.....	5-3
5.2.5 Private Organizations and Companies .....	5-4
5.3 List of Agencies, Organizations, and Persons to Whom Copies of this Statement are Sent .....	5-4
5.3.1 Federal Agencies.....	5-4
5.3.2 State Agencies .....	5-4
5.3.3 Elected Officials .....	5-5
5.3.4 County and Local Agencies.....	5-5
5.3.5 Tribal Organizations.....	5-5
5.3.6 Newspapers and Libraries .....	5-5
5.3.7 Other Organizations.....	5-5
5.3.8 Industry/Business.....	5-6
5.3.9 Individuals .....	5-6
<b>6.0 LIST OF PREPARERS AND REVIEWERS .....</b>	<b>6-1</b>
6.1 Bureau of Land Management EIS Team.....	6-1
6.2 AECOM EIS Team (Third-party Consultant) .....	6-2
6.3 Round Mountain Gold Corporation EIS Team (Applicant).....	6-3
<b>7.0 REFERENCES.....</b>	<b>7-1</b>

## TABLE OF CONTENTS

---

8.0 GLOSSARY ..... 8-1

9.0 INDEX..... 9-1

Appendix A Summary of Bedrock and Alluvial Groundwater Chemistry for Round Mountain and Gold Hill

Appendix B Noise Measurement Results and Field Monitoring Weather Conditions

Appendix C Groundwater Calibration Data

Appendix D Pit Lake Geochemistry Data

Appendix E Visual Contrast Worksheets and Visual Simulations

## VOLUME II

Table 4.3-1	Simulated Groundwater Budget at the Beginning of 1990 .....	4.3-6
Table 4.3-2	Modeled Hydraulic Parameter Ranges for Northern Big Smoky Valley Hydrostratigraphic Units.....	4.3-11
Table 4.3-3	Steady-state Pumping.....	4.3-12
Table 4.3-4	Simulated Groundwater Budget at the End of 2005 .....	4.3-19
Table 4.3-5	Estimated Maximum Dewatering Rates .....	4.3-21
Table 4.3-7	Round Mountain Pit Lake Modeling Scenarios .....	4.3-34
Table 4.3-8	Round Mountain Pit Lake Chemistry Results - Base Case Scenario .....	4.3-37
Table 4.3-9	Pit Lake Water Balance Summaries Expanded Pit - Base Case Scenario .....	4.3-38
Table 4.3-10	Input Solution Chemistries Used for Gold Hill Pit Lake Chemistry Models – Base Case Scenario .....	4.3-46
Table 4.3-11	Input Solution Chemistries Used For Gold Hill Pit Lake Chemistry Sensitivity Analyses.....	4.3-47
Table 4.3-12	Pit Lake Water Balance Summaries Gold Hill Pit - Base Case Scenario .....	4.3-51
Table 4.3-13	Gold Hill Pit Lake Chemistry Results – Base Case Scenario.....	4.3-54
Table 4.3-14	Gold Hill Rapid Infiltration Basins – Mean Water Quality Parameters .....	4.3-56
Table 4.3-15	Pit Lake Water Balance Summaries Current Pit - Base Case Scenario.....	4.3-60
Table 4.3-16	Pit Lake Water Balance Summaries Current Pit - Higher Infilling Scenario.....	4.3-65
Table 4.3-17	Round Mountain Current Permitted Pit Lake Chemistry Results – Base Case Scenario .....	4.3-67
Table 4.6-1	Potential Number of Mine-related Transportation Accidents Involving a Release.....	4.6-2
Table 4.7-1	Facility-wide Potential to Emit.....	4.7-3
Table 4.7-2	Round Mountain Total Current Mercury Emissions .....	4.7-4
Table 4.7-3	Fuel and Power Consumption – Proposed Action .....	4.7-5
Table 4.7-4	Fuel and Power Consumption – No Action Alternative.....	4.7-7
Table 4.9-1	Employment Estimates No Action Alternative.....	4.9-2
Table 4.9-2	Employment Estimates Round Mountain – Gold Hill Simultaneous Development Scenario.....	4.9-3
Table 4.9-3	Employment Estimates Round Mountain – Gold Hill Sequential Development Scenario.....	4.9-4
Table 4.9-4	New Construction-related Employment, Households, and Population Projects for the Proposed Action – Simultaneous Development Scenario .....	4.9-7
Table 4.9-5	New Operations-related Employment, Households, and Population Projections for the Proposed Action – Simultaneous Development Scenario .....	4.9-8

## LIST OF TABLES

---

Table 4.9-6	New Round Mountain Construction-related Employment, Households, and Population Projections for the Proposed Action – Sequential Development Scenario ....	4.9-10
Table 4.9-7	New Underground Operations-related Employment, Households, and Population Projections for the Proposed Action – Sequential Development Scenario .....	4.9-11
Table 4.9-8	New Gold Hill Construction-related Employment, Households, and Population Projections for the Proposed Action – Sequential Development Scenario .....	4.9-12
Table 4.9-9	Gold Hill Operations-related Employment, Households, and Population Projections Proposed Action – Sequential Development Scenario .....	4.9-13
Table 4.9-10	RMGC Net Proceeds, Sales, Use, and Property Tax Payments (2003-2007) .....	4.9-17
Table 4.14-1	Acres of Vegetation Disturbed or Removed Under the Proposed Action .....	4.14-2
Table 4.16-1	Impacts to Grazing Allotments.....	4.16-1
Table 4.16-2	Water-related Range Improvements Impacted under the Proposed Action .....	4.16-2
Table 4.17-1	Chemicals of Potential Concern .....	4.17-7
Table 4.17-2	Exposed Pathways in the SLERA .....	4.17-8
Table 4.17-3	Calculated HQs for Receptor Species.....	4.17-9
Table 4.20-1	Surface Mining Equipment Roster and Associated Noise Emissions .....	4.20-2
Table 4.23-1	Irreversible and Irretrievable Commitment of Resources by the Proposed Action .....	4.23-1

## VOLUME II

Figure 4.2-1	Cumulative Effects Study Area for Geology and Minerals.....	4.2-4
Figure 4.3-1	Cumulative Effects Study Area for Water Quality (Surface and Ground) and Water Use .....	4.3-3
Figure 4.3-2	Groundwater Model Domain.....	4.3-4
Figure 4.3-3	Groundwater Model Grid, Domain, and Boundaries.....	4.3-7
Figure 4.3-4	Groundwater Model Layers and Hydraulic Conductivity for the Round Mountain Area .....	4.3-8
Figure 4.3-5	Model Simulated Recharge Zones .....	4.3-9
Figure 4.3-6	Simulated Evapotranspiration Zones .....	4.3-10
Figure 4.3-7	Simulated Pumping Well Locations.....	4.3-13
Figure 4.3-8	Currently Permitted Round Mountain Pit Average Monthly Pumping Rates .....	4.3-14
Figure 4.3-9	Currently Permitted Round Mountain Pit Pre-mining Simulated and Observed Water Levels.....	4.3-16
Figure 4.3-10	Pre-mining Simulated Water Table Levels and Model Residuals .....	4.3-17
Figure 4.3-11	Simulated Water Elevations and Model Residuals for Calibration at the End of 2005 .....	4.3-18
Figure 4.3-12	Round Mountain Pit Current and Proposed Action simulated Water Elevations at the End of Mining .....	4.3-23
Figure 4.3-13	Proposed Action Groundwater Drawdown at the End of Mining (2018) .....	4.3-24
Figure 4.3-14	Proposed Action Total Drawdown at Time of Maximum Drawdown Extent .....	4.3-25
Figure 4.3-15	Proposed Action Water Levels at Time of Maximum Drawdown Extent.....	4.3-26
Figure 4.3-16	Proposed Action Drawdown at Time of 99% Pit Lake Recovery .....	4.3-29
Figure 4.3-17	Proposed Action Water Levels at Time of 99% Pit lake Recovery.....	4.3-32
Figure 4.3-18	Proposed Action Round Mountain Pit Lake Conceptual Model .....	4.3-33
Figure 4.3-19	Proposed Action Round Mountain Pit Stage-volume and Stage-area Curves .....	4.3-39
Figure 4.3-20	Proposed Action Round Mountain Pit Predicted Pit Lake Elevation .....	4.3-40
Figure 4.3-21	Proposed Action Gold Hill Pit Simulated Water Elevations at End of Mining .....	4.3-43
Figure 4.3-23	Gold Hill Pit Lake Conceptual Model .....	4.3-49
Figure 4.3-24	Proposed Action Gold Hill Pit Stage-volume and Stage-area Curves .....	4.3-52
Figure 4.3-25	Proposed Action Gold Hill Pit Predicted Pit Lake Elevation Filing Curve.....	4.3-53
Figure 4.3-26	Currently Permitted Pit Water Table Drawdown at the End of Mining (2015).....	4.3-58
Figure 4.3-27	Currently Permitted Pit Total Drawdown at Time of Maximum Drawdown Extent .....	4.3-61

## LIST OF FIGURES

---

Figure 4.3-28	Currently Permitted Pit Water Levels at Time of Maximum Drawdown Extent.....	4.3-62
Figure 4.3-29	Currently Permitted Pit Drawdown Extent at Time of 99% Pit Lake Recovery.....	4.3-63
Figure 4.3-30	Currently Permitted Pit Water Levels at Time of 99% Pit Lake Recovery .....	4.3-64
Figure 4.4-1	Cumulative Effects Study Area for Cultural Resources and Native American Traditional Values.....	4.4-5
Figure 4.6-1	Cumulative Effects Study Route for Hazardous Materials and Solid Waste.....	4.6-7
Figure 4.7-1	Cumulative Effects Study Area for Air Quality.....	4.7-8
Figure 4.7-2	Mercury Deposition Contributions from Other Gold Mines.....	4.7-9
Figure 4.7-3	Mercury Deposition Contributions from All Nevada Gold Mines .....	4.7-11
Figure 4.7-4	Mercury Deposition Contributions from Global Background .....	4.7-12
Figure 4.9-1	Cumulative Effects Study Area for Social and Economic Values.....	4.9-21
Figure 4.10-1	Cumulative Effects Study Area for Recreation and Wilderness .....	4.10-4
Figure 4.12-1	Cumulative Effects Study Area for Visual Resources.....	4.12-4
Figure 4.13-1	Cumulative Effects Study Area for Soils and Watershed, Vegetation, and Noxious Weeds and Invasive Species .....	4.13-8
Figure 4.16-1	Cumulative Effects Study Area for Range Management .....	4.16-5
Figure 4.17-1	Cumulative Effects Study Area for Wildlife and Fisheries .....	4.17-15
Figure 4.18-1	Cumulative Effects Study Area for Desert Bighorn Sheep .....	4.18-12
Figure 4.18-2	Cumulative Effects Study Area for Greater Sage-Grouse .....	4.18-13
Figure 4.19-1	Cumulative Effects Study Area for Access and Land Use.....	4.19-6
Figure 4.20-1	Cumulative Effects Study Area for Noise .....	4.20-7