

Rosemont Copper Project EIS Cooperating Agency Coordination Meeting 01/21/2010 Agenda

Location: Federal Building, 300 West Congress, Tucson, Arizona, Room 4B

Facilitator: Teresa Ann Ciapusci, Cooperating Agency Liaison

AGENDA

09:30 – 09.45	Welcome	Ciapusci
09:45 – 10:15	Socio-Economic Report	Singh
10:15 – 10:45	CA-Led Alternative	Furgason/Ortman
10:45 – 11:00	BREAK	
11:00 – 11:30	Pima County Alternative (Upper McCleary)	Fonseca/Shepp
11:30 – 12:00	Pit Backfill Alternative	Rosemont

1:00 pm OPTIONAL WORKSHOP: Heritage Resources Farrell

Archaeology-focused discussion of large-scale investigations in the Rosemont project area including the status of cultural resources work, potential research questions, and strategies for archaeological data recovery.

INVITED COOPERATING AGENCIES

Tribes: Tohono O’odham Nation
Federal: Air Force, Army COE, BLM, Smithsonian Whipple Observatory
State of Arizona: AZDEQ, AZMMR, AZDWR, AZGF, AZGS, AZSMI, AZSLD, AZSP, ADOT
Local: Pima County, City of Tucson, Town of Sahuarita

INVITED GUESTS

Presenters:
Arizona Department of Mines and Mineral Resources
Rosemont Copper Company
Pima County
SWCA Environmental Consultants

Consultants:
Cheniae & Associates

Rosemont Copper Project EIS
Cooperating Agency Coordination Meeting 01/21/2010
Optional Afternoon Heritage Resources Workshop

Introductions

Update on Process

Alternatives to the proposed Mining Plan of Operations
Archaeological Survey report
Tribal Consultation
Ethnohistory Phase I

Recommendations for Mitigation

General (for all “action” alternatives):

In-lieu-of conservation

- Santa Rita Experimental Range?
- Helvetia?
- Where else?
-

Archival research on mining

Ethnohistory Phase II (Tohono O'odham Nation, San Carlos Apache Tribe,
Mescalero Apache Tribe, Ft. Sill Apache Tribe, Zuni Pueblo, Hopi Tribe)

Traditional cultural property report

Tribal recommendations

Alternative specific:

Tribal requests for plant salvage
Archaeological data recovery
Research Questions
Strategies

Next steps, wrap-up

Materials that meet the criteria of Freedom of Information Act exemptions are not posted on this website.

Refer to <http://www.fs.fed.us/im/foia/foiaexemptions.htm> for additional information.

Meeting minutes not posted here fall under this criteria.

Attendance Record

Cooperating Agencies	Participant(s)
Tohono O'odham Nation	Peter Steere THPO
Air Force, 162d Fighter Airwing	Unavailable – advance notice
Army Corps of Engineers	Unavailable – advance notice
USDI BLM	DAN MOORE CINDY ALVARAZO
Smithsonian Institution	Dan Brocius

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**Rosemont Copper Project
Cooperating Agency Meeting
January 21, 2010**

Cooperating Agencies	Participant(s)
AZ Dept of Environmental Quality	Dennis Turner via telephonic conference bridge
AZ Dept of Mines and Mineral Resources	Maden M. Singh
AZ Department of Transportation	
AZ Dept of Water Resources	Lana Grignano
AZ Game and Fish Department	Linda Pollack via telephone conference line John Windes
AZ Geological Survey	JON SPENCER

**Rosemont Copper Project
Cooperating Agency Meeting
January 21, 2010**

Cooperating Agencies	Participant(s)
AZ State Land Department	David James
AZ State Mine Inspector	
AZ State Parks	Bob Casavant
City of Tucson	
Pima County	Julia Fonseca Loy NEFF ERIC SHEPP Mark Krieski
Town of Sahuarita	Orlanthia Henderson Joe Marques

**Rosemont Copper Project
Cooperating Agency Meeting
January 21, 2010**

Guests	Affiliation
G.L. Cheniae	G.L. Cheniae and Associates
DALE CRITMAN Tom Fungoso Jonathan Rigg	SWCA Environmental Consultants
	Rosemont Copper Company

Kent Ellett
Kathy Arnold

USFS
Rosemont Copper

Attendance Record

Cooperating Agencies	Participant(s)
Tohono O’odham Nation	Peter Steere
Air Force, 162d Fighter Airwing	Unavailable – advance notice
Army Corps of Engineers	Unavailable – advance notice
USDI BLM	Dan Moore Cindy Alvarez
Smithsonian Institution	Dan Brocious
AZ Dept of Environmental Quality	Dennis Turner via telephone conference line
AZ Dept of Mines and Mineral Resources	Madan M. Singh
AZ Department of Transportation	
AZ Dept of Water Resources	Laura Grignano
AZ Game and Fish Department	John Windes Linda Pollack via telephone conference line
AZ Geological Survey	John Spencer
AZ State Land Department	David Jacobs
AZ State Mine Inspector	
AZ State Parks	Bob Casavant
City of Tucson	

**Rosemont Copper Project
Cooperating Agency Meeting
January 21, 2010**

Cooperating Agencies	Participant(s)
Pima County	Julia Fonseca Erick Shepp Loy Neff Mark Krieski
Town of Sahuarita	Orlanthia Henderson Joe Marques
Guests	Affiliation
G.L. Cheniae	G.L. Cheniae and Associates
Dale Ortman Tom Furgason Jonathan Rigg	SWCA Environmental Consultants
Kathy Arnold Jamie Sturgess	Rosemont Copper Company
Brian Lindenlaub	Westland Resources
Kent Ellett Reta Laford Jeanine Derby Mindee Roth Bev Everson	Coronado National Forest

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01/21/10 CAMTNG PM SESSION

NAME

AFFILIATION

Amy Sobrech	TUCSON BLM
Cindy Alvarez	Tucson BLM
Linda Mayo	Pima County Admin/CRHPO
Jamie Stinger	Rosemont Copper
Peter Steere	TCN
Bill Gillespie	Caranado NF
Mary Farrell	" "
Jerome Hesse	SWCA
Jain Ayres	U of AZ
Orlanthia Henderson	Town of Sahuarita
Suzanne Griset	SWCA
Loy NEFF	Pima Co Admin/CRHPO
Kent Ellett	USFS

**Rosemont Copper Project
Cooperating Agency Meeting – Optional Heritage Workshop
January 21, 2010**

Attendance Record

Cooperating Agencies	Participant(s)
Tohono O’odham Nation	Peter Steere
Air Force, 162d Fighter Airwing	Unavailable – advance notice
Army Corps of Engineers	Unavailable – advance notice
USDI BLM	Cindy Alvarez Amy Sobtech
Smithsonian Institution	
AZ Dept of Environmental Quality	
AZ Dept of Mines and Mineral Resources	
AZ Department of Transportation	
AZ Dept of Water Resources	
AZ Game and Fish Department	
AZ Geological Survey	
AZ State Land Department	
AZ State Mine Inspector	
AZ State Parks	
City of Tucson	
Pima County	Linda Mayro Loy Neff
Town of Sahuarita	Orlanthia Henderson

**Rosemont Copper Project
Cooperating Agency Meeting – Optional Heritage Workshop
January 21, 2010**

Guests	Affiliation
Jim Ayers	University of Arizona
Suzanne Griset Jerome Hesse	SWCA Environmental Consultants
Jamie Sturgess	Rosemont Copper Company
Kent Ellett Mary Farrell Bill Gillespie	Coronado National Forest

An Assessment of the Economic Impacts of the Rosemont Copper Project on the Economies of the Cochise/Pima/Santa Cruz Counties Study Area, Arizona, and the United States

by Dr. Madan M. Singh

Arizona Department of Mines & Mineral Resources

Special Report 26

November 2009

In partial fulfillment of contract
(To be updated on contract completion.)



State of Arizona
Jan Brewer, Governor

Phoenix, Arizona

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES

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Cover: Exposed mineralization at Rosemont copper deposit

**An Assessment of the Economic Impacts of the Rosemont Copper Project
on the Economies of the Cochise/Pima/Santa Cruz Counties Study Area,
the State of Arizona, and the United States**

Arizona Department of Mines and Mineral Resources

November 2009

**Prepared by the
L. William Seidman Research Institute
W. P. Carey School of Business
Arizona State University**

An Assessment of the Economic Impacts of the Rosemont Copper Project on the Economies of the Cochise/Pima/Santa Cruz Counties Study Area, the State of Arizona, and the United States

Executive Summary

This report summarizes the results of an economic impact analysis of the Rosemont Copper Project, an open-pit mining operation to be developed on a 15,000 acre site in Pima County about 30 miles southeast of Tucson. The analysis employed the REMI PI+ regional economic forecasting model to estimate the economic impacts of the Project for the Cochise/Pima County/Santa Cruz Counties study area, for the State of Arizona, and for the United States.

Cochise/Pima/Santa Cruz Counties

Construction Phase

- Construction of the Project will generate an average annual increase of \$96 million (all dollar-denominated figures refer to 2008\$) in economic activity in the study area (measured in terms of demand for goods and services from local suppliers) over a four-year engineering/construction period.
- The engineering/construction phase will provide a total of 3,600 person-years of employment for local workers.
- Wages and salaries and non-labor income (dividends, interest, rent, proprietors' income, and net profits) produced by the economic activity associated with the engineering/construction phase will provide an average of \$38 million per year in additional income to area residents.
- The engineering/construction phase will generate almost \$5 million per year in revenues for local governments in the study area.

- Over the entire engineering/construction period, impacts will total \$385 million in additional demand for goods and services from suppliers in the study area, \$245 million in gross regional product, \$152 million in personal income, and \$18 million in local government revenues.

Production/Post-Production Phase

- Production activities will generate an average annual increase of \$701 million per year in economic activity (measured in terms of incremental regional output) within the study area over a 20-year production period.
- Mine and mill operations will employ an average of 406 workers – with peak employment of 444 – and will support an average of 1,700 other jobs – a total of approximately 2,100 additional jobs for area residents.
- Wages and salaries and non-labor income produced by the economic activity will provide an annual average of \$140 million in additional income to area residents.
- Production activities will generate an average of \$19 million per year in incremental revenues for local governments in the study area.
- Over the entire expected production/post-production period, the overall impacts will be \$15 billion in additional output, \$8 billion in gross regional product, \$3 billion in personal income, and \$404 million in local government revenues.
- The Rosemont Copper Project will have lasting positive effects on the economy of the study area. Permanent changes to the regional economy would occur as a result of the increased levels of economic activity associated with the development and operation of the Rosemont mine. These changes will result in residual economic impacts in the Cochise/Pima/Santa Cruz Counties area that will persist after the end of the Project. The forecast results indicate that the level of economic activity would be \$52 million per year higher, the area residents' income \$68 million per year higher, employment more than 300 higher, and local government revenues \$2 million per year more than if the Rosemont Copper Project never existed.

The State of Arizona

Construction Phase

- Construction of the Project will generate an average annual increase of \$122 million in economic activity in the state (measured in terms of demand for goods and services from Arizona suppliers) over a four-year engineering/construction period.
- The engineering/construction phase will provide a total of 3,900 person-years of employment for Arizona workers.
- Wages and salaries and non-labor income resulting from the economic activity associated with the engineering/construction phase will provide an average of \$45 million per year in additional income to Arizona residents.
- The engineering/construction phase will generate almost \$6 million per year in revenues during the engineering/construction period for state government.
- Over the entire engineering/construction period, impacts will total \$489 million in additional demand for goods and services from Arizona suppliers, \$317 million in gross regional product, \$182 million in personal income, and \$23 million in state government revenues.

Production/Post-Production Phase

- Production activities will generate an average annual increase of \$907 million per year in economic activity (measured in terms of incremental regional output) in the state over a 20-year production period.
- Mine and mill operations will support an average of 2,900 additional jobs for Arizona workers.
- Wages and salaries and non-labor income produced by the economic activity will provide an annual average of \$214 million in additional income for Arizona residents.
- Production activities will generate an average of \$32 million per year in incremental state government revenues.

- Over the entire expected production/post-production period, the overall impacts will be \$19 billion in additional output, \$11 billion in gross regional product, \$5 billion in personal income, and \$681 million in state government revenues.
- The Rosemont Copper Project will have lasting positive effects on the Arizona economy. Permanent changes to the state's economy would occur as a result of the increased levels of economic activity associated with the development and operation of the Rosemont mine. These changes will result in residual economic impacts in the state after the end of the Project. The forecast results indicate that the level of economic activity would be \$111 million per year higher, state residents' income \$96 million per year higher, employment 500 higher, and state government revenues \$4 million per year higher than if the Rosemont Copper Project never existed.

The United States

Construction Phase

- Construction of the Project will generate an average annual increase of \$568 million in economic activity in the nation (measured in terms of demand for goods and services) over a four-year engineering/construction period.
- The engineering/construction phase will provide a total of 11,600 person-years of employment for U.S. workers.
- Wages and salaries and non-labor income associated with the engineering/construction phase will provide an average of \$167 million per year in additional income to U.S. residents.
- The engineering/construction phase will generate \$53 million per year in additional revenues during the engineering/construction period for the federal government.
- Over the entire engineering/construction period, the impacts will total \$2.3 billion in additional demand for goods and services, \$1.2 million in gross domestic product, \$668 million in personal income, and \$210 million in federal government revenues.

Production/Post-Production Phase

- Production activities will generate an average annual increase of \$1.3 billion per year in economic activity in the nation (measured in terms of incremental output) over a 20-year production period.
- Mine and mill operations will support a total of approximately 4,200 additional jobs for U.S. residents.
- Wages and salaries and non-labor income produced by the economic activity will provide an annual average of \$352 million in additional income to U.S. residents.
- Production activities will generate an average of \$128 million per year in incremental revenues for the federal government.
- Over the entire expected production/post-production period, the overall impacts will be \$27 billion in additional output, \$15 billion in gross domestic product, \$8 billion in personal income, and \$3 billion in federal government revenues.

THE ROSEMONT COPPER PROJECT

1. INTRODUCTION

This report summarizes the results of an economic impact analysis of the Rosemont Copper Project, an open-pit mining operation to be developed on a 15,000 acre site in Pima County about 30 miles southeast of Tucson. The analysis employed the REMI PI+ regional economic forecasting model to estimate the economic impacts of the Project for the Cochise/Pima County/Santa Cruz Counties study area, for the State of Arizona, and for the United States.

At prices of \$1.75/lb. for copper, \$15.00/lb. for molybdenum, and \$10.00/ounce for silver, combined proven and probable sulfide mineral reserves total nearly 546 million tons grading 0.45 percent copper, 0.015 percent molybdenum, and 0.12 ounces/ton silver. Proven and probable oxide mineral reserves total about 70 million tons grading 0.17 percent copper. Contained metal in the sulfide mineral reserves (proven and probable) is estimated to be 4.9 billion pounds of copper, 161 million pounds of molybdenum, and 65 million ounces of silver. Contained metal in the proven and probable oxide mineral reserves is estimated to be 241 million pounds of copper. The mining operation is projected to produce more than 200 million pounds of copper per year. In addition to copper, it is also projected to produce an average of 4.7 million pounds of molybdenum and 2.7 million ounces of silver per year (M3 Engineering and Technology Corp.).

The total cost of developing the site for mining and construction of the processing facilities will be \$897 million (2008\$). When in operation, employment will average 406 per year, and total annual production costs will average \$301 million per year during the 20-year production period (M3 Engineering and Technology Corp.).

1.1 Summary of the Results: Engineering/Construction Phase

The results of the economic impact analysis indicate that the engineering/construction phase will generate an average annual increase of \$96 million in economic activity in the three-county study area (measured in terms of demand for goods and services from local suppliers) and will provide a total of 3,600 person-years of employment for local workers during a four-year engineering/construction period. The jobs and non-labor income (dividends, interest, rent, proprietors' income, and net profits) produced by the economic activity will also provide an average of \$38 million per year in additional income to area residents and \$5 million per year in incremental revenues to local governments in the study area. Over the entire engineering/construction period, impacts will total \$385 million in additional demand for goods and services, \$245 million in gross regional product, \$152 million in personal income, and \$18 million in local government revenues.

For the State of Arizona, the economic impact analysis estimates that the engineering/construction phase will generate an average annual increase of \$122 million in economic activity in the state (measured in terms of demand for goods and services from Arizona suppliers) and will provide a total of 3,900 person-years of employment for Arizona workers during a four-year engineering/construction period. The jobs and non-labor income resulting from the economic activity will also provide an average of \$45 million per year in additional income to state residents and \$6 million per year in incremental state government revenues. Over the entire engineering/construction period, the impacts will total \$489 million in additional demand for goods and services from Arizona suppliers, \$317 million in gross regional product, \$182 million in personal income, and \$23 million in state government revenues.

For the U.S. economy, the engineering/construction phase will generate an average annual increase of \$568 million in economic activity in the nation and will provide a total of 11,600 person-years of employment for U.S. workers during a four-year engineering/construction period. The jobs and non-labor income produced by the economic activity will also provide an average of \$167 million per year in additional income to U.S. residents and \$53 million per year

in incremental revenues to the federal government. Over the entire engineering/construction period, impacts will total \$2.3 billion in additional demand for goods and services, \$1.2 billion in gross domestic product, \$668 million in personal income, and \$210 million in federal government revenues.

1.2 Summary of Results: Production/Post-Production Phase

The productive life of the Rosemont Copper Project is projected to be 20+ years. Based on the cost analysis in the feasibility study, the total costs associated with the production/post-production phase of the Project, including reclamation and costs related to closure of the mine will total over \$6 billion.

For the three-county study area, production activities will generate an average annual increase of \$701 million in economic activity (measured in terms of incremental regional output) and will support an average of 2,100 jobs for residents of the study area. The wages and salaries and non-labor income produced by the economic activity will provide an average of \$140 million per year in additional income to area residents and \$19 million per year in incremental revenues to local governments in the region. Over the entire expected life of the Project, the overall impacts will be \$15 billion in additional output, \$8 billion in gross regional product, \$3 billion in personal income, and \$404 million in local government revenues.

For the State of Arizona, production activities will generate an average annual increase of \$907 million in economic activity and will support an average of 2,900 jobs for Arizona workers. The wages and salaries and non-labor income produced by the economic activity will provide an average of \$214 million per year in additional income for state residents and \$32 million per year in incremental state government revenues. Over the entire expected life of the Project, the overall impacts will be \$19 billion in additional output, \$11 billion in gross regional product, \$5 billion in personal income, and \$681 million in state government revenues.

For the nation, production activities will generate an average annual increase of \$1.3 billion in economic activity and will support an average of 4,200 jobs for U.S. residents. The wages and

salaries and non-labor income produced by the economic activity will provide an average of \$352 million per year in additional income to U.S. residents and \$128 million per year in incremental federal government revenues. Over the entire expected life of the Project, overall impacts will be \$27 billion in additional output, \$15 billion in gross domestic product, \$8 billion in personal income, and \$3 billion in federal government revenues.

1.3 Comparison of Results with the Previous Analysis Based on a Pima/Santa Cruz Counties Study Area

All three parts of the economic impact analysis were prepared using the latest version of the REMI regional economic forecasting model. The Seidman Institute previously conducted a similar analysis of the economic impact of the Rosemont Copper Project based on a two-county study area comprised of Pima and Santa Cruz Counties (Seidman Institute 2009). That study did not include impact analyses for the state or for the nation. The earlier analysis employed a different version of the REMI model.

As a consequence of using the new version of the REMI model, the results for the three-county study area are not consistent with the previous estimates reported for the two-county study area. The estimated impacts for the engineering/construction phase are all substantially higher than the numbers reported in the previous study. For the production/post production phase, the employment, income-related, and government revenue numbers are higher, while output and gross regional product are somewhat lower than the earlier estimates.

Regional Economic Models Inc., the builder of the REMI model, has been in business for nearly 30 years and has a policy of continually updating their economic impact models based on the latest available data and advances in economic analysis and econometric methods. The model used for this analysis incorporates many changes to the previous version – including changes to both individual equations and to its overall structure. The parameters in the model have been re-estimated using a modified and updated dataset that included data through 2007. In addition, the economic forecasts incorporated into the new model were updated to reflect more recent views on future economic trends. The sum of these changes has resulted in somewhat

different results compared with the previous analysis. The fact that the numbers are different should be interpreted in that context rather than in terms of which numbers are “right.” The results of the current analysis should be taken as reasonable estimates of the economic impact of the Rosemont Copper Project produced by a state-of-the-art regional forecasting model based on the current state of the local, state, and national economies.

2. Economic/Financial Overview

The following discussion is based upon economic and financial information contained in the *Rosemont Copper Project Updated Feasibility Study* (M3 Engineering and Technology Corp.). All dollar-denominated figures in this report are stated in terms of 2008\$ to be consistent with the cost/financial data in the feasibility study.

The total cost of construction is estimated to be \$897 million. The cost figures for the construction and development of the site for mining as reported in the feasibility study are summarized in Table 1. Expenditures for goods and services, payrolls, and tax payments associated with the engineering/construction phase will total \$881 million over a four-year period. Table 2 lists the total and yearly expenditures for the engineering/construction phase.

The productive life of the Rosemont Copper Project is projected to be 20+ years. Based on the cost analysis presented in the updated feasibility study, the total costs associated with the production/post-production phase of the Project, including reclamation and costs related to closure of the mine will total over \$6 billion. Table 3 summarizes the cost figures for a representative year during the production phase as reported in the feasibility study. The total cost figure translates to \$5.1 billion in expenditures for goods and services, payrolls, and government payments -- or approximately \$252 million per year over the 20-year production period. Table 2 lists the total and yearly expenditures during the production/post-production phase of the Project. These figures include spending associated with the mining operations, processing of the ore, maintenance/replacement of facilities and equipment, reclamation, administration, taxes, and other outlays, but do not include accounting cost components such as salvage value and depreciation.

Table 1: Rosemont Copper Project - Construction Costs
(Millions of 2008\$)

Cost Category	
Site Development	8.5
Mine	214.6
Oxide Plant	53.6
Sulfide Plant	327.3
Power/Water Systems	82.0
Ancillary Facilities	26.9
 Total Direct Cost	 712.7
Indirect Costs (Field mobilization, EPCM, taxes, commissioning, spare parts, contingency funds, etc.)	184.4
 Total Costs	 897.2

Column may not add to totals due to rounding.

Source: Table 1-40, Rosemont Copper Project Updated Feasibility Study, 2009

Table 2: Rosemont Copper Project - Total Expenditures by Year
(Millions 2008\$)

	Engineering/Construction Phase	Production/Post-Production Phase
Total	880.6	5,138.2
Annual Average*	220.2	252.2
Year		
Engineering/Construction Phase		
PP3	60.1	
PP2	272.5	8.7
PP1	488.9	37.6
Production Phase		
1	59.1	231.5
2		275.6
3		262.9
4		276.9
5		279.5
6		281.3
7		280.4
8		261.8
9		255.7
10		263.1
11		274.4
12		240.4
13		260.1
14		261.2
15		252.5
16		235.4
17		211.8
18		213.1
19		221.1
20		205.7
Post-Production Phase		
21		42.9
22		3.9
23		0.9

*Annual average value for the Production/Post-Production Phase refers to years 1 - 20 when full production activity will occur.

Columns may not add to totals due to rounding.

Source: Computed from information in the Rosemont Copper Project Updated Feasibility Study, 2009

Table 3: Rosemont Copper Project - Annual Production Costs
(Millions of 2008\$)

Cost Category	For Year 2
Mine Operations	70.1
Processing - Mill	91.5
Processing - SXEW	18.4
Other Operating Costs	9.0
Shipping, Refining, and Smelting	62.4
Taxes/Royalty	30.8
Pre-production Mining Costs	2.9
Reclamation Costs	0.8
Other Costs/Salvage Value	-2.1
Depreciation	173.4
Total Production Costs	457.1

The cost figures include financial and accounting cost components not included in the annual expenditure figures reported in Table 2.

Column may not add to total due to rounding.

Source: Table 1-53, Rosemont Copper Project Updated Feasibility Study, 2009

3. Economic Impacts

Economic impacts are measured as changes in economic activity attributable to an event or policy change. Economists distinguish between direct impacts and total impacts. The direct impacts are changes in the economy that are the direct result of the event or policy change. In this study, the event being analyzed is the Rosemont Copper Project and the direct impacts of the construction and operation of the Project will be the purchases of goods and services from suppliers, the wages and salaries paid to mine employees, and the taxes and other payments to governments. The total impacts of the Project will be the final changes in the area economy after all of the indirect effects caused by the direct impacts have worked their way through the economy. Conventionally, the total impacts are measured by the additional economic activity that occurs as a result of the event or policy change – in terms of economic measures such as output, income, employment, etc.

The estimates of the direct impacts and of the total impacts have been produced by very different methods. The direct impacts have been calculated from information in the *Rosemont Copper Project Updated Feasibility Study* in combination with other data from secondary sources. The total economic impacts of the Rosemont Copper Project were estimated using three different versions of the REMI PI+ regional economic forecasting model. These computer models were developed by Regional Economic Models Inc. for use by a consortium of Arizona state agencies, including Arizona State University. The estimates of the direct impacts were used as inputs to the process, and the REMI models generated detailed estimates of the total economic impacts. The methodology and data used to develop the estimates of the direct impacts and the operation of the REMI PI+ model are described in the Technical Appendix.

The economic impacts for the Cochise/Pima/Santa Cruz Counties study area were estimated using a county-level version of the Arizona-specific REMI PI+ model. The economic impacts of the Project for the State of Arizona were estimated using a state-level version of the model, and the impacts for the U.S. economy were estimated using a national version of the REMI PI+ model.

3.1 Direct Impacts

3.1.1 Engineering/Construction Phase

Total spending associated with the engineering/construction phase will be \$881 million. However, much of the equipment and specialized services to be purchased is not produced within the three-county study area or the State of Arizona. The total expenditures for goods and services from local suppliers in Cochise/Pima/Santa Cruz Counties (including the local share of the value of equipment ordered through local suppliers but produced elsewhere) are estimated at \$205 million. Annual spending levels over the four-year engineering/construction period in the three-county study area are shown in Table 4. Most of these expenditures would be focused in the construction, mining support, and business services sectors.

At the statewide level, total purchases of goods and services from Arizona suppliers would be slightly higher at \$221 million. Annual expenditures in Arizona for the four-year engineering/construction period are listed in Table 5. Again, most of these expenditures would occur in the construction, mining support, and business services sectors.

3.1.2 Production/Post-Production Phase

Total direct spending associated with the production/post-production phase (including reclamation and mine closure activities) will be more than \$5.1 billion over a 25-year period. These expenditures will produce the following direct economic impacts within the Cochise/Pima/Santa Cruz Counties study area: \$1.5 billion in purchases of goods and services from local suppliers (shown as non-labor expenditures); an average of 406 jobs and \$438 million in wages and salaries paid to area workers; and \$132 million in revenues to local area governments. The annual figures for each of these measures are shown in Table 4.

The direct economic impacts of the production/post-production phase for the State of Arizona will produce substantially larger amounts of purchases of goods and services from Arizona

Table 4: Rosemont Copper Project - Direct Impacts by Year
Cochise/Pima/Santa Cruz Counties Study Area
(Millions 2008\$)

	Engineering/ Construction Expenditures	Total Production/Post-Production Expenditures			Wages & Salaries	Local Government Revenues	Employment
			Non-Labor Expenditures				
Total	204.9	2,101.1	1,531.4	437.8	132.0		
Annual Average*	51.2	100.8	74.4	20.2	6.2	406	
Year							
Engineering/Construction Phase							
PP3	14.2				0.2		
PP2	63.1	11.2	4.8	5.4	1.0	158	
PP1	113.8	39.9	20.7	17.2	2.0	341	
Production Phase							
1	13.9	96.5	69.9	20.9	5.7	421	
2		106.9	79.9	20.9	6.1	422	
3		103.1	76.8	21.0	5.3	426	
4		103.7	76.7	21.1	5.9	426	
5		104.1	77.7	21.1	5.3	426	
6		106.0	79.2	21.1	5.7	426	
7		103.6	76.8	21.1	5.7	426	
8		98.6	72.3	21.1	5.2	426	
9		103.5	75.8	21.1	6.6	426	
10		106.0	78.0	21.1	7.0	426	
11		109.2	80.8	21.9	6.6	444	
12		101.8	74.3	21.9	5.7	444	
13		105.9	77.7	21.9	6.3	444	
14		106.2	77.7	21.9	6.7	444	
15		104.6	75.9	21.9	6.8	444	
16		97.5	72.9	17.9	6.7	354	
17		89.1	65.6	16.5	7.0	326	
18		89.3	65.7	16.4	7.2	326	
19		90.6	67.5	16.3	6.8	326	
20		88.8	66.1	16.5	6.2	326	
Post-Production Phase							
21		33.4	17.4	11.5	4.4	326	
22		1.1	1.1				
23		0.1	0.1				

*Annual average values refer to years 1 - 20 when full production activities will occur.

Numbers may not add to totals due to rounding.

Source: Computed from information in the results from the REMI PI+ regional economic forecasting model.

Table 5: Rosemont Copper Project - Direct Impacts by Year
State of Arizona
(Millions 2008\$)

	Engineering/ Construction Expenditures	Total Production/Post-Production Expenditures			Wages & Salaries	State Government Revenues	Employment
			Non-Labor Expenditures				
Total	221.4	2,584.9	1,922.3	437.8	224.8		
Annual Average*	55.4	124.1	92.9	20.2	11.0	406	
Year							
Engineering/Construction Phase							
PP3	15.3						
PP2	68.1	14.9	9.5	5.4	0.0	158	
PP1	123.0	52.6	34.6	17.2	0.9	341	
Production Phase							
1	15.0	118.4	89.3	20.9	8.2	421	
2		132.5	100.9	20.9	10.7	422	
3		127.5	98.8	21.0	7.7	426	
4		129.1	98.1	21.1	10.0	426	
5		129.5	100.8	21.1	7.6	426	
6		132.2	102.0	21.1	9.2	426	
7		128.4	98.1	21.1	9.3	426	
8		120.9	91.5	21.1	8.3	426	
9		128.3	94.4	21.1	12.8	426	
10		132.4	97.3	21.1	14.0	426	
11		137.5	103.1	21.9	12.4	444	
12		123.8	92.9	21.9	9.0	444	
13		131.1	97.8	21.9	11.4	444	
14		131.4	96.7	21.9	12.8	444	
15		128.1	93.0	21.9	13.2	444	
16		118.9	88.2	17.9	12.7	354	
17		107.2	77.0	16.5	13.8	326	
18		107.7	77.0	16.4	14.3	326	
19		110.5	81.2	16.3	13.0	326	
20		106.6	79.6	16.5	10.6	326	
Post-Production Phase							
21		32.8	18.3	11.5	2.9	326	
22		1.1	2.2				
23		0.1	0.3				

*Annual average values refer to years 1 - 20 when full production activities will occur.

Numbers may not add to totals due to rounding.

Source: Computed from information in the results from the REMI PI+ regional economic forecasting model.

suppliers – \$1.9 billion – and \$225 million in state government revenues. The annual figures for the direct impacts for the State of Arizona are shown in Table 5.

3.2 Total Impacts

This section summarizes the results from the REMI model. The total impacts of the Project are measured in terms of:

- Output – The dollar value of all goods and services produced in the region.
- Gross Regional Product – The dollar value of all goods and services produced for final demand in the region. It excludes the value of intermediate goods and services purchased as inputs to final production.
- Personal Income – The total income received by residents of the region from all sources.
- Total Employment – the number of full- and part-time jobs by place of work.
- Government Revenues – taxes and other payments received by the region's government(s).

3.2.1 Engineering/Construction Phase

3.2.1.A Cochise/Pima/Santa Cruz Counties

The development of the Rosemont Copper Project site over a four-year engineering/construction period will produce substantial benefits for the Cochise/Pima/Santa Cruz Counties study area. It will generate an average annual increase of \$96 million in economic activity in the area (measured in terms of demand for goods and services from local suppliers) and will provide a total of 3,600 person-years of employment for local workers. The wages and salaries and non-labor income (dividends, interest, rent, proprietors' income and net profits) produced by the economic activity will provide an average of \$38 million per year in additional income to area residents and \$5 million per year in incremental revenues to local governments in the region. Over the entire engineering/construction period, these impacts are equivalent to \$385 million in additional demand for goods and services from local suppliers,

\$245 million in gross regional product, \$152 million in personal income, and \$18 million in local government revenues (Table 6).

The economic impacts of the engineering/construction phase of the Rosemont Copper Project will not be confined to the study area's mining and construction industries. The overall economic impacts (taking into account the combination of the direct and indirect effects) will be felt across all sectors of its economy. The strongest impacts will be on the construction, manufacturing, trade, business services, and health/social assistance sectors. Appendix tables A1, A2, and A3 show the incremental private-sector economic activity in each of 19 major industries in terms of output, employment, and earnings respectively.

3.2.1.B The State of Arizona

The development of the Rosemont Copper Project site will produce even larger benefits for the State of Arizona. It will generate an average annual increase of \$122 million in economic activity in the state (measured in terms of demand for goods and services from Arizona suppliers) and will provide a total of 3,900 person-years of employment for Arizona workers. The wages and salaries and non-labor income produced by the economic activity will provide an average of \$45 million per year in additional income to state residents and \$6 million per year in incremental state government revenues. Over the entire engineering/construction period, these impacts are equivalent to \$489 million in additional demand for goods and services from Arizona suppliers, \$317 million in gross regional product, \$182 million in personal income, and \$23 million in state government revenues (Table 7).

The economic impacts of the engineering/construction phase of the Rosemont Copper Project will not be confined to Arizona's mining and construction industries. The overall economic impacts (accounting for both the direct and indirect effects) will be felt across all sectors of its economy. The strongest impacts would be on the construction, manufacturing, trade, and business services sectors. Appendix tables A4, A5, and A6 list the incremental private-sector economic activity in each of 19 major industries in terms of output, employment, and earnings respectively.

Table 6: Rosemont Copper Project - Engineering/Construction Phase - Total Impacts by Year
Cochise/Pima/Santa Cruz Counties Study Area
(Millions 2008\$)

	Output	Gross Regional Product	Personal Income	Employment	Local Government Revenues
Total*	385.4	245.4	151.5	3,627	18.0
Annual Average	96.4	61.3	37.9	907	4.5
Year					
Engineering/Construction Phase					
PP3	25.2	15.8	9.0	245	1.2
PP2	114.2	72.0	41.7	1,089	5.3
PP1	207.8	130.9	77.3	1,930	9.7
Production Phase					
1	38.2	26.7	23.6	363	1.8

Output is the dollar value of all goods and services produced in the region, including intermediate goods as well as value added.

Gross regional product is the dollar value of all goods and services produced for final demands.

It excludes intermediate goods and services.

Personal income is the total income received by residents from all sources.

* Total figure for employment is measured in terms of person-years of employment.

Columns may not add due to rounding.

Source: Results from the REMI PI+ regional economic forecasting model.

Table 7: Rosemont Copper Project - Engineering/Construction Phase - Total Impacts by Year
State of Arizona
(Millions 2008\$)

	Output	Gross Regional Product	Personal Income	Employment	State Government Revenues
Total*	489.4	316.8	181.5	3,909	23.2
Annual Average	122.4	79.2	45.4	977	5.8
Year					
Engineering/Construction Phase					
PP3	31.6	20.2	10.8	263	1.5
PP2	144.1	92.6	50.0	1,172	6.9
PP1	263.8	169.4	93.1	2,086	12.5
Production Phase					
1	49.9	34.7	27.7	388	2.2

Output is the dollar value of all goods and services produced in the region, including intermediate goods as well as value added.

Gross regional product is the dollar value of all goods and services produced for final demands.

It excludes intermediate goods and services.

Personal income is the total income received by residents from all sources.

* Total figure for employment is measured in terms of person-years of employment.

Columns may not add due to rounding.

Source: Results from the REMI PI+ regional economic forecasting model.

3.2.1.C The United States

The development of the Rosemont Copper Project site will also produce substantial benefits to the national economy. It will generate an average annual increase of \$568 million in economic activity (measured in terms of demand for goods and services from U.S. suppliers) and will provide a total of 11,600 person-years of employment for U.S. workers. The wages and salaries and non-labor income produced by the economic activity will provide an average of \$167 million per year in additional income to U.S. residents and \$53 million per year in incremental revenues to the federal government. Over the entire engineering/construction period, these impacts are equivalent to \$2.3 billion in additional demand for goods and services, \$1.2 billion in gross domestic product, \$668 million in personal income, and \$210 million in federal government revenues (Table 8).

The overall economic impacts (taking into account the combination of the direct and indirect effects) will be distributed broadly across all sectors of the U.S. economy. The strongest impacts would be on the manufacturing, trade, and business services sectors. Appendix tables A7, A8, and A9 show the incremental private-sector economic activity in each of 19 major industries in terms of output, employment, and earnings respectively.

3.2.2 Production/Post-Production Phase

The economic benefits associated with the operation of the Rosemont Mine will be much larger in scale than those generated by its construction for all three levels of geography.

3.2.2.A Cochise/Pima/Santa Cruz Counties

Production activities will generate an average annual increase of \$701 million in economic activity (measured in terms of incremental regional output) within the three-county study area and will provide an average of 2,100 jobs for area residents. The wages and salaries and non-labor income produced by the economic activity will provide an average of \$140 million per

Table 8: Rosemont Copper Project - Engineering/Construction Phase - Total Impacts by Year
United States of America
(Millions 2008\$)

	Output	Gross Domestic Product	Personal Income	Employment	Federal Government Revenues
Total*	2,272.9	1,207.1	667.5	11,560	210.1
Annual Average	568.2	301.8	166.9	2,890	52.5
Year					
Engineering/Construction Phase					
PP3	157.9	81.3	39.2	840	14.2
PP2	705.8	370.8	191.2	3,669	64.6
PP1	1,270.5	674.7	357.0	6,386	117.5
Production Phase					
1	138.8	80.2	80.1	665	14.0

Output is the dollar value of all goods and services produced in the region, including intermediate goods as well and value added.

Gross domestic product is the dollar value of all goods and services produced for final demands.

It excludes intermediate goods and services.

Personal income is the total income received by residents from all sources.

* Total figure for employment is measured in terms of person-years of employment.

Columns may not add due to rounding.

Source: Results from the REMI PI+ regional economic forecasting model.

year in additional income to area residents and \$19 million per year in incremental revenues to local governments in the study area. (All measured over the 20-year production period.) Over the entire production/post-production period, these impacts are equivalent to \$15 billion in additional output, \$8 billion in gross regional product, \$3 billion in personal income, and \$404 million in local government revenues (Table 9).

The economic impacts of the production/post-production phase of the Rosemont Copper Project will not be confined to the mining industry. The overall economic impacts (taking into account both the direct and indirect effects) will be felt across all sectors of the study area's economy. The strongest impacts would be on the mining, utility, manufacturing, trade, real estate/rental/leasing, and business services sectors. Appendix tables A10, A11, and A12 show the incremental private-sector economic activity in each of 19 major industries in terms of output, employment, and earnings respectively.

3.2.2.B The State of Arizona

Production activities will generate an average annual increase of \$907 million in economic activity (measured in terms of incremental output) within the State of Arizona and will provide an average of 2,900 jobs for state residents. The wages and salaries and non-labor income produced by the economic activity will provide an average of \$214 million per year in additional income to state residents and \$32 million per year in incremental state government revenues. (All measured over the 20-year production period.) Over the entire production/post-production period, these impacts are equivalent to \$19 billion in additional output, \$11 billion in gross regional product, \$5 billion in personal income, and \$681 million in state government revenues (Table 10).

The economic impacts of the production/post-production phase of the Rosemont Copper Project will not be confined to the state's mining industry. The overall economic impacts (taking into account the combination of direct and indirect effects) will be widely distributed across all sectors of the Arizona economy. The strongest impacts would be on the mining, utility, construction, manufacturing, trade, real estate/rental/leasing, and business services sectors.

Table 9: Rosemont Copper Project - Production/Post-Production Phase - Total Impacts by Year
Cochise/Pima/Santa Cruz Counties Study Area
(Millions 2008\$)

	Output	Gross Regional Product	Personal Income	Employment	Local Government Revenues
Total	14,649.7	8,053.9	3,144.7		404.0
Annual Average*	701.3	382.5	139.8	2,106	18.8
Year					
Engineering/Construction Phase					
PP3					
PP2	65.0	39.8	19.0	495	2.3
PP1	166.9	100.9	46.9	1,156	5.8
Production Phase					
1	620.4	338.3	91.2	2,045	15.8
2	812.2	433.4	107.4	2,227	17.5
3	664.5	364.9	110.5	2,178	16.8
4	741.1	401.2	118.1	2,204	17.7
5	656.7	362.9	121.6	2,178	17.3
6	718.6	391.6	128.1	2,199	18.0
7	731.0	396.4	131.6	2,175	18.1
8	733.1	395.0	133.3	2,116	17.4
9	725.7	394.4	139.9	2,168	19.3
10	747.1	405.2	145.2	2,196	20.0
11	717.6	393.7	151.6	2,253	20.2
12	594.3	336.4	149.9	2,153	19.1
13	684.7	378.7	156.7	2,211	20.2
14	731.6	400.6	162.1	2,232	20.9
15	738.5	404.0	165.9	2,224	21.2
16	694.4	379.2	156.6	1,973	19.6
17	697.7	376.9	153.0	1,852	19.3
18	716.0	385.1	155.4	1,851	19.6
19	690.7	374.6	158.8	1,861	19.5
20	609.6	338.2	158.4	1,819	18.9
Post-Production Phase					
21	286.5	177.0	136.2	1,455	14.4
22	57.3	46.2	77.3	438	2.7
23	48.6	39.2	70.1	369	2.3

Output is the dollar value of all goods and services produced in the region, including intermediate goods as well as value added.

Gross regional product is the dollar value of all goods and services produced for final demands.

It excludes intermediate goods and services.

Personal income is the total income received by residents from all sources.

*Annual average values refer to years 1 - 20 when full production activity will occur.

Columns may not add due to rounding.

Source: Results from the REMI PI+ regional economic forecasting model.

Table 10: Rosemont Copper Project - Production/Post-Production Phase - Total Impacts by Year
State of Arizona
(Millions 2008\$)

	Output	Gross Regional Product	Personal Income	Employment	State Government Revenues
Total	19,206.2	10,833.3	4,808.4		681.4
Annual Average*	907.1	508.5	214.1	2,906	31.9
Year					
Engineering/Construction Phase					
PP3					
PP2	113.3	68.4	32.9	689	4.2
PP1	280.2	166.0	78.1	1,581	11.1
Production Phase					
1	798.9	444.7	143.1	2,810	25.6
2	1,008.5	553.0	168.7	3,111	29.9
3	854.9	477.1	169.8	2,929	26.7
4	940.6	522.2	184.0	3,045	29.7
5	851.4	477.5	184.9	2,903	27.3
6	918.1	510.7	195.0	2,965	29.4
7	930.0	515.6	199.6	2,934	29.5
8	923.1	506.4	197.7	2,778	28.1
9	934.6	524.4	216.3	3,038	33.8
10	966.0	543.1	227.3	3,130	35.7
11	943.4	532.6	234.5	3,139	35.1
12	803.0	460.4	224.7	2,864	30.8
13	905.0	512.4	236.2	3,007	34.1
14	959.2	540.8	246.5	3,086	36.2
15	968.7	546.4	252.9	3,090	36.9
16	901.8	509.0	238.3	2,765	34.0
17	899.0	505.9	236.1	2,669	34.0
18	921.9	517.6	241.6	2,688	35.0
19	900.0	506.7	244.7	2,654	34.1
20	813.0	463.1	240.3	2,517	31.6
Post-Production Phase					
21	450.0	274.2	204.2	1,940	19.4
22	119.8	83.9	111.7	631	4.9
23	101.9	71.0	99.6	523	4.2

Output is the dollar value of all goods and services produced in the region, including intermediate goods as well as value added.

Gross regional product is the dollar value of all goods and services produced for final demands.

It excludes intermediate goods and services.

Personal income is the total income received by residents from all sources.

*Annual average values refer to years 1 - 20 when full production activity will occur.

Columns may not add due to rounding.

Source: Results from the REMI PI+ regional economic forecasting model.

Appendix tables A13, A14, and A15 present the incremental private-sector economic activity in each of 19 major industries in terms of output, employment, and earnings respectively.

3.2.2.C The United States

Production activities will generate an average annual increase of \$1.3 billion in economic activity for the nation and will provide an average of 4,200 jobs for U.S. residents. The wages and salaries and non-labor income produced by the economic activity will provide an average of \$352 million per year in additional income to U.S. residents and \$128 million per year in incremental revenues for the federal government. (All measured over the 20-year production period.) Over the entire production/post-production period, these impacts are equivalent to \$27 billion in additional output, \$15 billion in gross domestic product, \$8 billion in personal income, and \$3 billion in federal government revenues (Table 11).

The overall economic impacts (accounting for both the direct and indirect effects) will be widely distributed across all sectors of the U.S. economy. The strongest impacts would be on the utility, manufacturing, trade, finance/insurance, and business services sectors. Appendix tables A16, A17, and A18 show the incremental private-sector economic activity in each of 19 major industries in terms of output, employment, and earnings respectively.

4. Concluding Observations

4.1 Population Changes

Unlike most other regional economic impact models, REMI is a dynamic model that produces integrated multiyear forecasts and accounts for dynamic feedbacks among its economic and demographic variables. As such, it provides forecasts of the demographic impacts of the development and operation of the Rosemont mine in addition to forecasts of economic variables.

Table 11: Rosemont Copper Project - Production/Post-Production Phase - Total Impacts by Year
United States of America
(Millions 2008\$)

	Output	Gross Domestic Product	Personal Income	Employment	Federal Government Revenues
Total	27,267.7	15,283.3	7,578.7		2,660.5
Annual Average*	1,309.4	732.4	352.3	4,169	127.5
Year					
Engineering/Construction Phase					
PP3					
PP2	166.1	89.9	44.3	813	15.6
PP1	477.7	254.2	122.0	2,250	44.3
Production Phase					
1	1,213.9	658.5	259.1	4,422	114.6
2	1,489.9	814.7	316.7	5,094	141.8
3	1,254.3	676.3	284.6	4,266	117.7
4	1,372.2	755.2	321.5	4,641	131.5
5	1,247.0	674.5	304.2	4,109	117.4
6	1,342.9	732.1	328.5	4,344	127.4
7	1,334.0	729.7	332.5	4,188	127.0
8	1,256.9	664.0	295.0	3,563	115.6
9	1,389.5	788.4	378.4	4,656	137.2
10	1,447.2	830.7	403.0	4,875	144.6
11	1,422.8	805.1	401.4	4,719	140.1
12	1,161.6	647.4	342.2	3,703	112.7
13	1,320.6	742.9	381.3	4,156	129.3
14	1,399.6	794.1	407.0	4,375	138.2
15	1,383.1	789.0	409.5	4,313	137.3
16	1,273.1	728.9	382.7	3,797	126.9
17	1,252.2	728.7	383.9	3,750	126.9
18	1,290.3	750.7	393.5	3,797	130.7
19	1,259.3	722.7	383.2	3,594	125.8
20	1,078.2	614.7	337.4	3,016	107.0
Post-Production Phase					
21	497.3	298.7	233.6	1,656	52.0
22	-28.8	-1.6	75.8	-219	-0.3
23	-33.4	-6.2	57.6	-250	-1.1

Output is the dollar value of all goods and services produced in the region, including intermediate goods as well as value added.

Gross domestic product is the dollar value of all goods and services produced for final demands.

It excludes intermediate goods and services.

Personal income is the total income received by residents from all sources.

*Annual average values refer to years 1 - 20 when full production activity will occur.

Columns may not add due to rounding.

Source: Results from the REMI PI+ regional economic forecasting model.

The results of the analysis indicate that net migration into the Cochise/Pima/Santa Cruz Counties study area will increase by more than 300 per year in the early years of operation and then lessen, with an annual average net migration figure of about 150 over the entire 20-year production period. This increase in net migration would mean that the population of the study area would be approximately 2,000 larger after five years and more than 4,000 larger by the end of the production period compared with a situation in which the Rosemont Copper Project was not developed.

Similarly, the results of the state-level analysis indicate that net migration into Arizona will increase by more than 500 per year in the early years of operation and then lessen, with an annual average net migration figure of about 230 over the entire 20-year production period. This increase in net migration would mean that the state's population would be approximately 3,000 larger after five years and 7,000 larger by the end of the production period compared with a situation in which the Rosemont Copper Project had not been developed.

4.2 Residual Impacts

Results from the REMI forecasts of economic activity for the years after the closure of the mine show that the Rosemont Copper Project would have lasting effects on the economy of the three-county study area over and above the impacts during its 26-year "active" period. Permanent changes to the business community, to the labor market, to local governments, and to many other aspects of the local economy would occur as a result of the development and operations of the Rosemont mine. These changes will result in residual economic impacts in the Cochise/Pima/Santa Cruz Counties area. The forecast results indicate that the level of economic activity would be \$52 million per year higher, area residents' income \$68 million per year higher, employment more than 300 higher, and local government revenues \$2 million per year higher than if the Rosemont Copper Project had never existed. Annual figures for each of these measures for the ten years after closure are listed in Table 12.

The REMI state-level forecast for years after the closure of the mine show that the Rosemont Copper Project would also have similar lasting effects on the Arizona economy. Permanent

Table 12: Rosemont Copper Project - Residual Impacts by Year
Cochise/Pima/Santa Cruz Counties Study Area
(Millions 2008\$)

	Output	Gross Regional Product	Personal Income	Employment	Local Government Revenues
Total*	518.4	382.3	675.6		22.9
Annual Average	51.8	38.2	67.6	347	2.3
Year					
Post-Closure					
24	45.1	36.0	65.9	338	2.2
25	44.5	34.9	63.6	326	2.1
26	45.4	34.9	62.8	325	2.1
27	47.3	35.7	63.1	331	2.1
28	50.0	36.9	64.5	340	2.2
29	52.7	38.4	66.6	350	2.3
30	55.1	39.6	68.6	357	2.4
31	57.4	40.9	70.9	363	2.4
32	59.5	42.0	73.4	368	2.5
33	61.4	43.1	76.2	371	2.6

Output is the dollar value of all goods and services produced in the region, including intermediate goods as well as value added.

Gross regional product is the dollar value of all goods and services produced for final demands.

It excludes intermediate goods and services.

Personal income is the total income received by residents from all sources.

*Total figures refer to the sum of years 24-33. Residual impacts would continue after year 33.

Columns may not add due to rounding.

Source: Results from the REMI PI+ regional economic forecasting model.

changes to the business community, to the labor market, to the state government, and to many other aspects of the Arizona economy would occur as a result of economic activity induced by the development and operation of the Rosemont mine, and these changes would result in residual economic impacts within Arizona. The state-level forecast results indicate that the level of economic activity would be \$111 million per year higher, the state residents' income \$96 million per year greater, employment 500 higher, and state government revenues \$4 million per year higher than if the Rosemont Copper Project had never existed. Annual figures for each of these measures for the ten years after the end of operations are provided in Table 13.

Results from the REMI national forecast do not show similar lasting effects for the overall U.S. economy.

Table 13: Rosemont Copper Project - Residual Impacts by Year
State of Arizona
(Millions 2008\$)

	Output	Gross Regional Product	Personal Income	Employment	State Government Revenues
Total*	1,111.6	655.6	956.4		43.7
Annual Average	111.2	65.6	95.6	498	4.4
Year					
Post-Production Phase					
24	94.8	58.8	92.5	474	3.9
25	94.1	57.8	89.2	458	3.9
26	97.2	59.0	88.3	462	3.9
27	102.0	61.2	89.2	475	4.1
28	107.7	63.9	91.3	490	4.3
29	113.1	66.4	94.0	504	4.4
30	118.8	69.0	97.4	518	4.6
31	123.5	71.2	100.8	526	4.7
32	128.2	73.4	104.9	534	4.9
33	132.3	75.1	109.0	539	5.0

Output is the dollar value of all goods and services produced in the region, including intermediate goods as well as value added.

Gross regional product is the dollar value of all goods and services produced for final demands.

It excludes intermediate goods and services.

Personal income is the total income received by residents from all sources.

*Total figures refer to the sum of years 24-33. Residual impacts would continue after year 33.

Columns may not add due to rounding.

Source: Results from the REMI PI+ regional economic forecasting model.

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TECHNICAL APPENDIX

A1. Economic Impact Analysis Using the REMI Model

This study used the REMI PI+ regional forecasting model to produce numeric estimates of the economic impacts associated with the construction, operation, and closure of the Rosemont mine. The general method for estimating impacts using the REMI model involves 4 steps:

1. Preparation of a baseline or control forecast for the study area – this baseline scenario provides a forecast of the future path of the study area’s economy based on a combination of the extrapolation of current economic conditions and an exogenous forecast of relevant economic variables without any changes in public policy or other external factors.
2. Development of a policy scenario – this policy scenario describes the direct effects that the event(s) – in this case the construction, operation, and closure of the Rosemont mine would have on the study area’s economy.
3. Preparation of a forecast simulation of the area economy based on the policy scenario – this alternative forecast provides a forecast of the future path of the area economy incorporating the effects of the changes specified in the policy scenario.
4. Comparison of the baseline and policy scenario forecasts – the differences between the future values of each variable in the forecasts provide numeric estimates of the nature and magnitudes of the economic impacts of Rosemont Copper Project on the study area.

A2. The REMI Model

REMI is an economic-demographic forecasting and simulation model developed by Regional Economic Models Inc. REMI is designed to forecast the impact of public policies and external events on an economy and its population. The REMI model is recognized by the business and academic community as the leading regional forecast/simulation tool available. A complete explanation of the model and discussion of the empirical estimation of the parameters/equations are given in *Regional Economic Modeling: A Systematic Approach to*

Economic Forecasting and Policy Analysis (Treyz), Policy Insight 9.5: Model Documentation (REMI), Introduction to PI+: The Next Generation of Policy Insight (REMI), and PI+: Changes from Policy Insight v9.5 (REMI).

The REMI models used for this analysis were all versions of Policy Insight Model PI+ Version 1.1 leased from Regional Economic Models Inc. by a consortium of State agencies, including Arizona State University, for economic forecasting and policy analysis.

A3. Updating of the Baseline or Control Forecast

The PI+ v 1.1 models were delivered with national and local datasets containing data through 2007 and also with national and local baseline forecasts prepared by Regional Economic Models Inc. The REMI model incorporates procedures for updating the datasets and the baseline forecasts with more recent data. The research team performed these procedures to prepare updated baseline forecasts for this study. In practice, the methodology requires first updating the national baseline forecast since forecast values of national economic variables are important inputs to the state-level and county-level forecasts.

The national forecast was updated by using 2008 data from the U.S. Bureau of Economic Analysis and forecast data for the 2009–2017 period from the latest available Global Insight national forecast (September 2009). The baseline forecast of the Arizona model was updated based on 2008 employment data from the Arizona Department of Commerce.

A4. Definition of the Local Study Area

REMI is a county-based model, so that the study area must be defined in terms of one or more Arizona counties. The site on which the Rosemont Copper Project is being developed is located in Pima County southeast of the Tucson urbanized area, near the border with Santa Cruz County, and also in relatively close proximity to Cochise County. The approved bounds of analysis for the environment impact assessment have been defined by the U.S. Forest Service to include three counties – Cochise, Pima, and Santa Cruz Counties. Based on this definition, the

combined three-county region was specified as the study area for the county-level REMI economic impact analysis.

A5. Definition of the Study Period

REMI is a dynamic model that produces integrated multiyear forecasts. The analysis of the economic impacts of the Rosemont Copper Project has employed this feature of the model. The feasibility study provides annual information relating to both capital and operating costs for the projected lifetime of the Project. The timeline for the Project in the study includes three pre-production years (designated years PP3 through PP1 in this report), a production period of 20 years (designated years 1 through 20), and a post-production period of three years (years 21 through 23). The first year of the post-production period (Year 21) includes some production activity during the first part of the year. The economic impact analysis of the construction phase provides estimates of the impacts over the four-year engineering/construction period specified in the feasibility study (year PP3 to year 1). The analysis of the production/post-production phase encompasses a 25-year period (years PP2 through year 23).

The REMI model requires specification of calendar year time periods for its forecast process. Based on a timeline on the Rosemont Copper Project website, the study period starting date (PP3) was assumed to be 2009.

A6. Calculation of the Direct Impacts

All of the estimates of the direct impacts of the Rosemont Copper Project were based on the economic and financial information contained in the *Rosemont Copper Project Updated Feasibility Study* (M3 Engineering and Technology Corp.). Information from two other reports relating to the Rosemont Copper Project was also used to supplement the information in the feasibility study:

- Data relating to reclamation costs from the *Mined Land Reclamation Plan* (Tetra Tech Inc).
- Information relating to various aspects of construction and operation from the *Mine Plan of Operations* (WestLand Resources Inc).

The REMI model requires input data in very specific formats. In particular, the data must conform to the 70 economic sectors in the model. In many cases the economic data provided by the feasibility study and the other two reports were not sufficiently detailed to be used directly as inputs for the REMI model. Detailed data from the direct requirements table in the *U.S. Benchmark Input-Output Accounts* (U. S. Bureau of Economic Analysis) were used to convert the information into a form usable by the model. The direct requirements coefficients for each industry specify the dollar amount of inputs from each supplying industry needed to produce a dollar of industry output.

A7. Government Revenues

Estimates of revenues received by each of the three levels of government from Rosemont Copper operations were based on tax information contained in the *Rosemont Copper Project Updated Feasibility Study*. The share of state transactions privilege tax, severance tax, and income tax collections distributed to the area local governments was calculated from data in the Arizona Department of Revenue *FY2008 Annual Report*.

Estimates of revenues received by area local governments and the state government as a result of the incremental economic activity induced by Rosemont Copper operations and/or construction activities were based on ratios of collections per dollar of gross regional product calculated from data obtained from the U.S. Census Bureau's *State and Local Government Finances database*. Estimates of revenues received by the federal government as a result of the incremental economic activity induced by Rosemont Copper operations and/or construction activities were based on ratios of collections per dollar of gross domestic product calculated from data obtained from the U.S. Census Bureau's *2009 Statistical Abstract*.

Appendix Table A1: Total Economic Impacts
Engineering/Construction Phase of the Rosemont Copper Project
Output by Industry
Cochise/Pima/Santa Cruz Counties Study Area
(Millions of 2008 \$)

Industry/Year	Total	Annual Average	PP3	PP2	PP1	1
Total Non-Farm Private Sector	385.4	96.4	25.2	114.2	207.8	38.2
Forestry, Fishing, Other	0.0	0.0	0.0	0.0	0.0	0.0
Mining	0.2	0.0	0.0	0.1	0.1	0.0
Utilities	4.9	1.2	0.3	1.4	2.5	0.8
Construction	80.7	20.2	4.9	22.9	42.8	10.0
Manufacturing	104.4	26.1	7.4	32.2	58.3	6.6
Wholesale Trade	9.7	2.4	0.6	2.9	5.2	1.0
Retail Trade	21.0	5.3	1.3	6.0	10.9	2.9
Transp, Warehousing	2.5	0.6	0.2	0.7	1.3	0.3
Information	6.0	1.5	0.4	1.7	3.1	0.8
Finance, Insurance	12.2	3.1	0.9	3.9	6.7	0.8
Real Estate, Rental, Leasing	24.2	6.0	1.4	6.6	12.3	3.8
Profess, Tech Services	71.0	17.8	4.7	21.5	38.9	5.9
Mngmt of Co, Enter	2.2	0.6	0.2	0.7	1.2	0.2
Admin, Waste Services	9.9	2.5	0.6	2.9	5.3	1.1
Educational Services	0.9	0.2	0.0	0.2	0.4	0.2
Health Care, Social Asst	21.0	5.3	1.4	6.4	11.2	2.0
Arts, Enter, Rec	1.8	0.4	0.1	0.5	0.9	0.3
Accom, Food Services	5.6	1.4	0.3	1.5	2.8	0.9
Other Services (excl Gov)	7.1	1.8	0.5	2.1	3.8	0.8

Output is the dollar value of all goods and services produced in the region, including all intermediate goods as well as value added.

Source: Results from the REMI PI+ regional economic forecasting model.

**Appendix Table A2: Total Economic Impacts
Engineering/Construction Phase of the Rosemont Copper Project
Private Non-Farm Employment by Industry
Cochise/Pima/Santa Cruz Counties Study Area**

Industry/Year	Annual Average	PP3	PP2	PP1	1
Private Non-farm Employment	789	212	948	1,686	311
Forestry, Fishing, Other	0	0	0	0	0
Mining	0	0	0	1	0
Utilities	2	0	2	3	1
Construction	196	50	227	416	91
Manufacturing	103	31	130	226	23
Wholesale Trade	15	4	18	31	5
Retail Trade	64	17	75	131	32
Transp, Warehousing	6	2	7	12	2
Information	5	1	6	11	2
Finance, Insurance	20	6	27	44	4
Real Estate, Rental, Leasing	38	9	42	77	24
Profess, Tech Services	166	46	204	363	50
Mngmt of Co, Enter	5	1	6	11	1
Admin, Waste Services	46	12	55	98	17
Educational Services	6	1	6	11	4
Health Care, Social Asst	51	14	61	106	21
Arts, Enter, Rec	12	3	14	26	6
Accom, Food Services	26	6	29	53	17
Other Services (excl Gov)	31	9	39	66	11

Employment includes full-time and part-time jobs by place of work. Employees, sole proprietors, and active partners are included, but unpaid family workers and volunteers are excluded. Public sector and farm workers are excluded.

Source: Results from the REMI PI+ regional economic forecasting model.

Appendix Table A3: Total Economic Impacts
Engineering/Construction Phase of the Rosemont Copper Project
Earnings by Place of Work by Industry
Cochise/Pima/Santa Cruz Counties Study Area
(Millions of 2008 \$)

Industry/Year	Total	Annual Average	PP3	PP2	PP1	1
Total, Non-Farm Private Sector	149.8	37.4	9.3	42.9	79.3	18.2
Forestry, Fishing, Other	0.0	0.0	0.0	0.0	0.0	0.0
Mining	0.3	0.1	0.0	0.1	0.1	0.1
Utilities	0.9	0.2	0.0	0.2	0.4	0.2
Construction	31.1	7.8	1.9	8.7	16.3	4.2
Manufacturing	32.7	8.2	2.1	9.5	18.1	3.1
Wholesale Trade	4.1	1.0	0.2	1.2	2.1	0.6
Retail Trade	8.8	2.2	0.5	2.4	4.4	1.5
Transp, Warehousing	1.2	0.3	0.1	0.3	0.6	0.2
Information	1.8	0.5	0.1	0.5	0.9	0.3
Finance, Insurance	4.9	1.2	0.3	1.5	2.6	0.5
Real Estate, Rental, Leasing	1.8	0.5	0.1	0.5	0.9	0.3
Profess, Tech Services	35.8	9.0	2.4	10.8	19.4	3.2
Mngmt of Co, Enter	1.1	0.3	0.1	0.3	0.6	0.1
Admin, Waste Services	5.5	1.4	0.3	1.5	2.8	0.8
Educational Services	0.6	0.2	0.0	0.2	0.3	0.1
Health Care, Social Asst	12.5	3.1	0.8	3.5	6.3	1.8
Arts, Enter, Rec	0.8	0.2	0.0	0.2	0.4	0.1
Accom, Food Services	2.5	0.6	0.1	0.6	1.2	0.5
Other Services (excl Gov)	3.2	0.8	0.2	0.9	1.6	0.5

Earnings by place of work is the sum of wage and salary disbursements, supplements to wages and salaries, and proprietors' income.

Source: Results from the REMI PI+ regional economic forecasting model.

Appendix Table A4: Total Economic Impacts
Engineering/Construction Phase of the Rosemont Copper Project
Output by Industry
State of Arizona
(Millions of 2008 \$)

Industry/Year	Total	Annual Average	PP3	PP2	PP1	1
Total Non-Farm Private Sector	489.4	122.4	31.6	144.1	263.8	49.9
Forestry, Fishing, Other	0.0	0.0	0.0	0.0	0.0	0.0
Mining	1.0	0.3	0.1	0.3	0.6	0.1
Utilities	6.2	1.6	0.4	1.7	3.2	0.9
Construction	99.5	24.9	5.9	27.7	52.3	13.7
Manufacturing	127.0	31.7	8.8	38.8	70.7	8.7
Wholesale Trade	20.6	5.2	1.3	6.1	11.1	2.1
Retail Trade	27.2	6.8	1.6	7.7	14.3	3.6
Transp, Warehousing	7.2	1.8	0.5	2.1	3.9	0.7
Information	9.9	2.5	0.6	2.9	5.3	1.1
Finance, Insurance	22.9	5.7	1.6	7.3	12.7	1.2
Real Estate, Rental, Leasing	34.4	8.6	2.0	9.5	17.7	5.2
Profess, Tech Services	70.0	17.5	4.6	21.2	38.3	5.9
Mngmt of Co, Enter	5.6	1.4	0.4	1.7	3.1	0.4
Admin, Waste Services	12.6	3.1	0.8	3.7	6.8	1.2
Educational Services	1.8	0.4	0.1	0.5	0.9	0.3
Health Care, Social Asst	23.8	6.0	1.6	7.2	12.8	2.2
Arts, Enter, Rec	3.1	0.8	0.2	0.9	1.6	0.4
Accom, Food Services	7.7	1.9	0.5	2.1	3.9	1.2
Other Services (excl Gov)	8.8	2.2	0.6	2.6	4.7	0.9

Output is the dollar value of all goods and services produced in the region, including all intermediate goods as well as value added.

Source: Results from the REMI PI+ regional economic forecasting model.

Appendix Table A5: Total Economic Impacts
Engineering/Construction Phase of the Rosemont Copper Project
Private Non-Farm Employment by Industry
State of Arizona

Industry/Year	Annual Average	PP3	PP2	PP1	1
Private Non-farm Employment	858	229	1,029	1,832	341
Forestry, Fishing, Other	1	0	1	1	0
Mining	1	0	1	2	0
Utilities	2	0	2	4	1
Construction	199	49	226	418	102
Manufacturing	123	37	155	270	30
Wholesale Trade	23	6	28	48	8
Retail Trade	72	19	85	150	35
Transp, Warehousing	13	3	16	28	5
Information	9	2	11	18	3
Finance, Insurance	30	9	39	66	5
Real Estate, Rental, Leasing	36	9	40	73	22
Profess, Tech Services	157	43	193	344	49
Mngmt of Co, Enter	7	2	9	15	2
Admin, Waste Services	44	12	54	96	15
Educational Services	8	2	8	15	5
Health Care, Social Asst	53	14	64	113	20
Arts, Enter, Rec	13	3	15	26	6
Accom, Food Services	32	8	35	65	20
Other Services (excl Gov)	38	11	47	80	13

Employment includes full-time and part-time jobs by place of work. Employees, sole proprietors, and active partners are included, but unpaid family workers and volunteers are excluded. Public sector and farm workers are excluded.

Source: Results from the REMI PI+ regional economic forecasting model.

Appendix Table A6: Total Economic Impacts
Engineering/Construction Phase of the Rosemont Copper Project
Earnings by Place of Work by Industry
State of Arizona
(Millions of 2008 \$)

Industry/Year	Total	Annual Average	PP3	PP2	PP1	1
Total, Non-Farm Private Sector	181.9	45.5	11.3	52.0	95.8	22.8
Forestry, Fishing, Other	0.1	0.0	0.0	0.0	0.0	0.0
Mining	0.5	0.1	0.0	0.1	0.2	0.1
Utilities	1.1	0.3	0.1	0.3	0.5	0.2
Construction	37.6	9.4	2.2	10.3	19.5	5.6
Manufacturing	37.5	9.4	2.4	11.0	20.6	3.5
Wholesale Trade	8.6	2.2	0.5	2.4	4.5	1.2
Retail Trade	11.1	2.8	0.6	3.0	5.6	1.8
Transp, Warehousing	2.9	0.7	0.2	0.8	1.5	0.4
Information	2.7	0.7	0.2	0.8	1.4	0.4
Finance, Insurance	8.9	2.2	0.6	2.6	4.7	1.0
Real Estate, Rental, Leasing	3.2	0.8	0.2	0.8	1.6	0.6
Profess, Tech Services	35.1	8.8	2.3	10.6	18.9	3.2
Mngmt of Co, Enter	2.9	0.7	0.2	0.8	1.5	0.3
Admin, Waste Services	7.1	1.8	0.4	2.0	3.7	1.0
Educational Services	1.2	0.3	0.1	0.3	0.6	0.2
Health Care, Social Asst	13.3	3.3	0.8	3.8	6.8	1.8
Arts, Enter, Rec	1.3	0.3	0.1	0.4	0.7	0.2
Accom, Food Services	3.3	0.8	0.2	0.9	1.6	0.6
Other Services (excl Gov)	3.6	0.9	0.2	1.0	1.9	0.5

Earnings by place of work is the sum of wage and salary disbursements, supplements to wages and salaries, and proprietors' income.

Source: Results from the REMI PI+ regional economic forecasting model.

Appendix Table A7: Total Economic Impacts
Engineering/Construction Phase of the Rosemont Copper Project
Output by Industry
United States of America
(Millions of 2008 \$)

Industry/Year	Total	Annual Average	PP3	PP2	PP1	1
Total Non-Farm Private Sector	2,272.9	568.2	157.9	705.8	1,270.5	138.8
Forestry, Fishing, Other	1.855	0.5	0.1	0.6	1.0	0.1
Mining	82.395	20.6	5.8	25.5	45.8	5.3
Utilities	22.237	5.6	1.7	7.0	12.2	1.4
Construction	97.960	24.5	6.7	28.9	53.8	8.5
Manufacturing	1079.157	269.8	75.2	333.8	602.8	67.4
Wholesale Trade	115.598	28.9	7.8	35.8	65.1	6.8
Retail Trade	69.244	17.3	5.1	22.1	39.0	3.0
Transp, Warehousing	53.695	13.4	3.7	16.9	29.9	3.2
Information	77.871	19.5	5.2	24.0	44.3	4.3
Finance, Insurance	139.464	34.9	9.5	43.9	78.9	7.2
Real Estate, Rental, Leasing	94.772	23.7	6.8	29.5	52.4	6.1
Profess, Tech Services	179.112	44.8	12.2	55.0	100.1	11.9
Mngmt of Co, Enter	60.346	15.1	4.4	18.9	33.6	3.5
Admin, Waste Services	43.503	10.9	2.9	13.4	24.4	2.9
Educational Services	6.793	1.7	0.5	2.1	3.8	0.4
Health Care, Social Asst	78.996	19.7	5.3	26.0	44.4	3.3
Arts, Enter, Rec	11.410	2.9	0.8	3.6	6.4	0.6
Accom, Food Services	24.171	6.0	1.9	7.7	13.4	1.2
Other Services (excl Gov)	34.369	8.6	2.4	11.0	19.3	1.7

Output is the dollar value of all goods and services produced in the region, including all intermediate goods as well as value added.

Source: Results from the REMI PI+ regional economic forecasting model.

**Appendix Table A8: Total Economic Impacts
Engineering/Construction Phase of the Rosemont Copper Project
Private Non-Farm Employment by Industry
United States of America**

Industry/Year	Annual Average	PP3	PP2	PP1	1
Private Non-farm Employment	2,862	832	3,634	6,325	657
Forestry, Fishing, Other	6	2	7	13	3
Mining	85	25	106	186	21
Utilities	6	2	8	14	1
Construction	212	60	252	462	72
Manufacturing	822	244	1,045	1,798	199
Wholesale Trade	127	38	162	281	27
Retail Trade	198	63	260	439	31
Transp, Warehousing	104	29	132	230	24
Information	50	15	64	111	10
Finance, Insurance	135	38	174	301	25
Real Estate, Rental, Leasing	69	20	87	151	16
Profess, Tech Services	327	91	404	727	85
Mngmt of Co, Enter	56	17	71	124	13
Admin, Waste Services	165	45	206	365	42
Educational Services	28	8	35	62	7
Health Care, Social Asst	183	51	242	410	27
Arts, Enter, Rec	45	12	58	99	9
Accom, Food Services	96	29	122	214	19
Other Services (excl Gov)	152	43	199	338	26

Employment includes full-time and part-time jobs by place of work. Employees, sole proprietors, and active partners are included, but unpaid family workers and volunteers are excluded. Public sector and farm workers are excluded.

Source: Results from the REMI PI+ regional economic forecasting model.

Appendix Table A9: Total Economic Impacts
Engineering/Construction Phase of the Rosemont Copper Project
Earnings by Place of Work by Industry
United States of America
(Millions of 2008 \$)

Industry/Year	Total	Annual Average	PP3	PP2	PP1	1
Total, Non-Farm Private Sector	770.4	192.6	50.0	228.6	414.5	77.3
Forestry, Fishing, Other	0.9	0.2	0.1	0.2	0.4	0.2
Mining	31.5	7.9	2.2	9.6	17.0	2.6
Utilities	4.7	1.2	0.3	1.4	2.4	0.6
Construction	41.1	10.3	2.7	11.6	21.6	5.1
Manufacturing	279.9	70.0	18.1	83.7	153.4	24.6
Wholesale Trade	45.1	11.3	2.9	13.2	24.2	4.7
Retail Trade	29.3	7.3	2.0	8.6	15.4	3.3
Transp, Warehousing	22.1	5.5	1.5	6.6	11.8	2.4
Information	23.3	5.8	1.5	6.7	12.5	2.6
Finance, Insurance	55.2	13.8	3.5	16.3	29.5	5.8
Real Estate, Rental, Leasing	8.5	2.1	0.5	2.4	4.4	1.2
Profess, Tech Services	96.1	24.0	6.3	28.6	51.7	9.5
Mngmt of Co, Enter	28.3	7.1	2.0	8.6	15.1	2.6
Admin, Waste Services	22.9	5.7	1.4	6.6	12.1	2.8
Educational Services	4.7	1.2	0.3	1.3	2.4	0.7
Health Care, Social Asst	46.0	11.5	2.9	13.8	24.2	5.1
Arts, Enter, Rec	5.2	1.3	0.3	1.5	2.7	0.6
Accom, Food Services	10.4	2.6	0.7	3.0	5.4	1.3
Other Services (excl Gov)	15.4	3.8	1.0	4.6	8.1	1.6

Earnings by place of work is the sum of wage and salary disbursements, supplements to wages and salaries, and proprietors' income.

Source: Results from the REMI PI+ regional economic forecasting model.

Appendix Table A10: Total Economic Impacts - Production/Post-Production Phase of the Rosemont Copper Project - Output by Industry
Cochise/Pima/Santa Cruz Counties Study Area
(Millions of 2008 \$)

Industry/Year	Total	Annual																									
		Ave.*	PP2	PP1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Total Non-Farm Private Sector	14,649.7	701.3	65.0	166.9	620.4	812.2	664.5	741.1	656.7	718.6	731.0	733.1	725.7	747.1	717.6	594.3	684.7	731.6	738.5	694.4	697.7	716.0	690.7	609.6	286.5	57.3	48.6
Forestry, Fishing, Other	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mining	9,927.4	483.9	32.0	86.4	437.5	605.2	459.6	532.3	445.7	502.2	515.8	522.8	508.3	523.6	484.3	369.7	450.7	493.2	499.0	471.4	487.9	503.9	472.7	392.4	139.7	0.7	0.5
Utilities	911.3	47.0	1.7	10.0	43.9	49.3	48.1	47.1	48.1	49.1	47.8	45.9	47.2	47.6	48.8	49.0	48.8	48.8	49.0	47.4	43.2	43.0	43.2	44.1	13.5	1.9	1.7
Construction	655.6	17.5	2.5	7.2	15.3	19.5	20.7	21.4	21.2	21.0	20.4	19.4	19.2	18.9	18.8	17.7	17.5	17.4	17.1	15.1	13.4	12.6	12.1	11.4	7.8	-0.9	-4.5
Manufacturing	728.6	7.5	1.2	4.4	10.1	10.9	10.6	9.9	9.9	9.4	8.4	7.2	7.2	7.5	8.5	6.8	7.5	7.2	6.5	5.1	3.7	4.0	4.9	5.1	1.0	-3.3	-2.8
Wholesale Trade	332.7	11.3	1.3	4.6	8.6	10.0	10.8	11.1	12.1	11.9	11.9	11.0	11.6	12.3	14.1	12.1	13.3	13.0	12.2	10.8	9.0	9.1	10.2	10.1	6.7	2.9	2.8
Retail Trade	518.9	20.7	2.6	6.5	13.0	14.9	15.1	16.1	16.7	17.6	18.2	18.6	19.7	20.7	22.0	22.0	23.4	24.5	25.4	24.4	24.2	25.0	26.0	26.3	22.7	13.9	13.0
Transp, Warehousing	315.0	12.6	0.7	1.9	11.0	14.5	11.6	12.3	10.8	11.8	12.1	13.2	13.3	13.9	13.4	11.2	12.9	13.8	13.9	12.7	12.8	13.1	12.6	11.0	3.9	0.4	0.3
Information	300.8	6.2	0.9	2.0	3.7	4.3	4.4	4.8	5.0	5.3	5.5	5.6	5.9	6.2	6.6	6.7	7.0	7.4	7.6	7.4	7.3	7.5	7.8	7.9	7.1	4.5	4.2
Finance, Insurance	235.0	8.3	3.7	6.9	11.2	10.2	9.6	9.4	9.0	9.0	8.6	8.2	8.3	8.3	8.6	8.1	8.3	8.3	8.2	6.9	6.2	6.2	6.4	6.2	4.1	-0.6	-0.6
Real Estate, Rental, Leasing	764.4	23.0	3.7	8.9	16.5	18.8	19.2	20.1	20.6	21.5	21.8	21.9	22.9	23.7	24.9	24.7	25.8	26.5	27.0	25.2	24.3	24.6	25.1	25.1	21.2	10.8	9.7
Profess, Tech Services	523.8	18.2	3.2	7.3	14.6	16.6	16.9	17.3	17.7	18.2	18.2	17.8	18.5	19.1	20.2	19.4	20.2	20.4	20.4	18.5	17.1	17.2	17.6	17.5	13.0	4.9	4.2
Mngmt of Co, Enter	228.5	8.0	5.5	6.4	7.1	7.2	7.9	8.0	8.1	8.2	8.2	7.6	7.7	7.8	8.1	8.1	8.2	8.3	8.3	8.0	7.9	8.0	8.9	9.0	8.8	1.1	0.1
Admin, Waste Services	179.6	6.3	1.0	2.6	5.2	5.9	5.8	6.0	6.0	6.2	6.2	6.1	6.3	6.5	6.8	6.6	6.9	7.0	7.0	6.4	6.0	6.1	6.2	6.1	4.7	1.9	1.7
Educational Services	22.5	0.9	0.1	0.3	0.5	0.6	0.6	0.7	0.7	0.7	0.8	0.8	0.8	0.9	0.9	1.0	1.0	1.1	1.1	1.1	1.0	1.1	1.1	1.1	1.0	0.7	0.7
Health Care, Social Asst	326.9	17.9	3.0	7.1	13.1	14.3	13.7	14.3	14.5	15.2	15.6	15.8	16.8	17.6	18.7	18.6	19.9	20.9	21.7	20.7	20.7	21.5	22.4	22.7	20.0	11.6	11.5
Arts, Enter, Rec	45.8	2.1	0.2	0.6	1.1	1.3	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.2	2.3	2.4	2.6	2.7	2.6	2.7	2.8	2.9	3.0	2.8	1.8	1.7
Accom, Food Services	133.3	4.5	0.6	1.6	3.1	3.6	3.7	3.9	4.1	4.2	4.3	4.4	4.6	4.7	4.9	4.9	5.1	5.2	5.2	5.0	4.8	4.9	4.9	4.9	4.2	2.8	2.6
Other Services (excl Gov)	130.7	5.4	1.0	2.3	4.6	5.1	4.9	5.1	5.1	5.2	5.2	5.4	5.5	5.7	5.6	5.8	6.0	6.0	5.6	5.4	5.5	5.6	5.6	4.3	2.0	1.9	

Output is the dollar value of all goods and services produced in the region, including all intermediate goods as well as value added.

*Annual average values refer to years 1 - 20.

Source: Results from the REMI PI+ regional economic forecasting model.

**Appendix Table A11: Total Economic Impacts - Production/Post-Production Phase of the Rosemont Copper Project - Private Non-Farm Employment by Industry
Cochise/Pima/Santa Cruz Counties Study Area**

Industry/Year	Annual Ave.*	PP2	PP1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Total Non-Farm Private Sector	1,743	432	1,000	1,708	1,855	1,819	1,836	1,819	1,830	1,810	1,765	1,788	1,808	1,862	1,787	1,830	1,842	1,837	1,619	1,511	1,510	1,525	1,498	1,198	364	304
Forestry, Fishing, Other	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0
Mining	379	130	337	399	401	403	402	402	401	399	398	398	397	416	416	416	415	415	324	294	294	294	295	292	-7	-6
Utilities	54	2	14	59	66	63	61	61	61	58	55	56	55	55	55	54	53	52	49	44	43	43	43	12	1	1
Construction	144	25	69	147	183	191	194	188	183	175	163	159	154	150	139	136	132	128	111	96	88	83	77	49	-18	-43
Manufacturing	17	5	16	34	36	34	30	29	26	22	17	16	16	18	13	13	12	9	5	1	1	3	3	-5	-13	-12
Wholesale Trade	41	8	27	49	54	55	54	56	52	49	43	43	44	48	39	41	38	34	28	22	21	23	22	12	4	3
Retail Trade	163	33	78	151	166	161	165	164	167	166	163	166	169	173	166	170	172	172	159	152	152	152	149	123	68	61
Transp, Warehousing	83	5	14	84	109	85	89	77	83	84	90	90	92	87	70	81	85	85	76	76	77	72	61	17	-3	-3
Information	12	3	7	12	13	13	13	13	13	13	12	12	12	12	12	12	12	12	11	11	10	10	10	8	5	4
Finance, Insurance	42	30	52	79	67	60	57	53	50	47	43	42	40	40	36	36	35	34	27	23	23	23	22	13	-4	-3
Real Estate, Rental, Leasing	125	22	51	96	109	110	114	116	120	121	121	125	129	134	132	137	140	143	133	128	129	132	131	111	60	53
Profess, Tech Services	144	30	68	135	150	150	151	152	154	152	146	149	152	159	151	155	155	152	135	122	121	123	121	85	25	20
Mngmt of Co, Enter	58	50	57	62	62	66	65	65	64	64	57	57	57	58	57	57	56	56	52	50	50	56	55	53	5	-1
Admin, Waste Services	90	20	48	95	103	100	100	98	98	96	91	93	94	97	91	93	93	91	81	74	73	74	72	52	15	13
Educational Services	22	3	7	14	16	16	17	18	19	19	20	21	22	23	24	25	26	27	26	25	26	27	27	24	16	15
Health Care, Social Asst	165	29	66	123	134	129	135	137	143	147	149	157	165	173	172	182	191	197	188	187	193	199	200	177	111	108
Arts, Enter, Rec	45	7	18	31	35	35	36	37	39	40	41	43	45	48	48	51	53	55	52	51	53	54	55	50	30	29
Accom, Food Services	83	12	30	58	67	69	74	76	79	81	82	85	88	91	90	93	95	96	90	87	88	88	87	75	49	46
Other Services (excl Gov)	75	18	41	79	83	78	78	76	77	76	73	75	76	78	75	77	78	78	71	67	67	68	67	50	20	19

Employment includes full-time and part-time jobs by place of work. Employees, sole proprietors, and active partners are included, but unpaid family workers and volunteers are excluded
Public sector and farm workers are excluded.

*Annual average values refer to years 1 - 20.

Source: Results from the REMI PI+ regional economic forecasting model.

Appendix Table A12: Total Economic Impacts - Production/Post-Production Phase of the Rosemont Copper Project - Earnings by Place of Work by Industry
Cochise/Pima/Santa Cruz Counties Study Area
(Millions of 2008 \$)

Industry/Year	Annual		PP2	PP1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
	Total	Ave.*																										
Total Non-Farm Private Sector	2,297.9	105.4	20.0	48.5	83.5	94.4	96.4	99.7	101.5	104.2	104.8	104.2	107.5	110.2	115.4	113.1	116.5	118.9	120.2	107.6	101.3	101.9	103.9	103.3	83.3	22.2	15.5	
Forestry, Fishing, Other	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Mining	586.8	26.8	7.2	19.1	22.8	23.5	24.2	24.6	25.1	25.6	26.0	26.6	27.3	27.9	29.8	30.5	31.1	31.8	32.5	26.1	24.4	24.8	25.2	25.5	25.8	-0.5	-0.5	
Utilities	135.7	6.6	0.2	1.4	5.9	6.7	6.5	6.4	6.6	6.7	6.6	6.4	6.6	6.7	6.8	6.9	6.9	6.9	7.0	6.8	6.2	6.2	6.2	6.4	2.0	0.3	0.3	
Construction	160.5	7.7	1.0	2.9	6.2	8.1	8.7	9.1	9.1	9.1	8.9	8.5	8.5	8.4	8.3	8.0	7.9	7.8	7.7	7.0	6.3	5.9	5.6	5.3	3.9	0.2	-1.6	
Manufacturing	102.6	5.1	0.5	1.9	4.3	5.2	5.6	5.7	5.9	6.0	5.8	5.4	5.4	5.5	5.9	5.3	5.5	5.4	5.2	4.5	3.8	3.6	3.8	3.7	1.7	-1.2	-2.1	
Wholesale Trade	101.8	4.7	0.5	1.8	3.3	4.0	4.4	4.6	5.0	5.0	5.0	4.7	4.9	5.2	5.8	5.1	5.6	5.5	5.2	4.6	3.9	3.9	4.3	4.2	2.9	1.3	1.0	
Retail Trade	201.2	8.8	1.0	2.6	5.2	6.2	6.4	6.9	7.2	7.6	7.9	8.1	8.5	8.9	9.4	9.5	10.0	10.5	10.8	10.5	10.4	10.6	10.9	11.0	9.6	6.0	5.3	
Transp, Warehousing	101.6	4.9	0.3	0.8	4.1	5.5	4.5	4.8	4.3	4.7	4.8	5.2	5.3	5.5	5.3	4.5	5.1	5.4	5.5	5.0	5.0	5.1	4.8	4.3	1.7	0.2	0.1	
Information	41.4	1.8	0.3	0.6	1.1	1.3	1.4	1.5	1.6	1.7	1.7	1.7	1.8	1.9	2.0	2.1	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	1.9	1.1	0.9	
Finance, Insurance	78.2	3.6	1.4	2.7	4.3	4.0	3.9	3.9	3.9	3.9	3.8	3.6	3.7	3.7	3.8	3.6	3.7	3.7	3.7	3.2	2.9	2.9	2.9	2.9	2.9	2.0	0.0	-0.2
Real Estate, Rental, Leasing	37.9	1.7	0.3	0.7	1.2	1.4	1.5	1.6	1.6	1.7	1.7	1.7	1.7	1.8	1.9	1.8	1.9	1.9	2.0	1.8	1.7	1.7	1.8	1.7	1.5	0.7	0.5	
Profess, Tech Services	203.8	9.5	1.7	3.9	7.6	8.8	9.1	9.3	9.5	9.7	9.7	9.5	9.8	10.0	10.5	10.1	10.4	10.5	10.5	9.4	8.6	8.6	8.7	8.6	6.2	1.8	1.1	
Mngmt of Co, Enter	82.7	3.6	2.5	2.8	3.1	3.2	3.6	3.6	3.6	3.7	3.7	3.4	3.5	3.6	3.7	3.7	3.7	3.8	3.8	3.7	3.6	3.7	4.1	4.1	4.0	0.5	0.0	
Admin, Waste Services	80.0	3.7	0.6	1.4	2.8	3.3	3.4	3.5	3.6	3.7	3.7	3.6	3.8	3.9	4.0	3.9	4.0	4.1	4.1	3.8	3.6	3.5	3.6	3.5	2.8	1.2	0.9	
Educational Services	13.8	0.6	0.1	0.2	0.3	0.4	0.4	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.5	0.4	
Health Care, Social Asst	246.6	10.8	1.6	3.9	7.3	8.3	8.4	8.9	9.1	9.6	9.8	10.0	10.6	11.0	11.6	11.6	11.8	12.4	12.8	12.3	12.2	12.5	12.9	13.1	11.5	7.0	6.5	
Arts, Enter, Rec	20.1	0.9	0.1	0.3	0.5	0.6	0.6	0.6	0.7	0.7	0.7	0.8	0.8	0.9	0.9	0.9	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.2	1.1	0.7	0.6	
Accom, Food Services	46.3	2.1	0.3	0.7	1.3	1.6	1.7	1.8	1.9	2.0	2.0	2.0	2.1	2.2	2.2	2.2	2.3	2.3	2.4	2.3	2.2	2.2	2.2	2.2	1.9	1.3	1.1	
Other Services (excl Gov)	56.4	2.5	0.4	1.0	1.9	2.2	2.2	2.3	2.3	2.4	2.4	2.4	2.5	2.6	2.7	2.7	2.8	2.8	2.9	2.7	2.6	2.7	2.7	2.7	2.2	1.2	1.0	

Earnings by place of work is the sum of wage and salary disbursements, supplements to wages and salaries, and proprietors' income.

Annual average values refer to years 1 - 20.

Source: Results from the REMI PI+ regional economic forecasting model.

Appendix Table A13: Total Economic Impacts - Production/Post-Production Phase of the Rosemont Copper Project - Output by Industry
State of Arizona
(Millions of 2008 \$)

Industry/Year	Annual		PP2	PP1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
	Total	Ave.*																									
Total Non-Farm Private Sector	19,206.2	907.1	113.3	280.2	798.9	1,008.5	854.9	940.6	851.4	918.1	930.0	923.1	934.6	966.0	943.4	803.0	905.0	959.2	968.7	901.8	899.0	921.9	900.0	813.0	450.0	119.8	101.9
Forestry, Fishing, Other	0.7	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mining	10,823.6	524.3	45.5	123.2	480.1	648.4	502.8	575.6	489.1	545.3	558.5	565.3	551.0	566.3	528.9	414.1	495.1	537.3	542.9	506.0	518.9	534.6	503.1	422.7	167.8	0.7	0.6
Utilities	1,044.7	50.4	2.5	11.9	46.9	52.7	51.3	50.5	51.3	52.4	51.1	49.0	50.8	51.4	52.6	52.5	52.6	52.8	50.9	46.6	46.5	46.6	47.4	16.2	3.1	2.7	
Construction	690.1	33.4	5.1	14.3	29.6	37.9	38.9	40.9	39.3	39.1	37.9	35.0	36.7	37.1	36.4	32.8	32.7	33.0	32.8	29.2	26.9	25.7	24.3	22.0	14.3	-2.4	-9.6
Manufacturing	778.2	35.3	4.0	13.3	31.0	34.8	34.5	34.4	34.9	35.2	33.8	31.2	33.5	35.4	38.7	34.8	37.7	38.4	38.1	35.4	33.2	34.7	37.6	38.4	27.0	14.1	14.1
Wholesale Trade	625.9	28.5	3.6	11.4	21.1	24.5	25.6	26.8	28.4	28.6	28.7	26.7	29.1	31.0	34.4	30.3	33.0	33.1	31.9	28.9	25.7	26.3	28.4	28.0	20.4	10.5	9.8
Retail Trade	793.8	34.7	4.9	11.7	21.8	25.1	24.8	27.0	27.3	29.1	30.0	30.1	33.3	35.4	37.2	36.3	38.8	41.1	42.7	41.1	41.4	43.0	44.4	44.4	38.3	23.2	21.3
Transp, Warehousing	478.9	23.0	1.8	4.8	20.2	26.0	21.2	22.5	20.1	21.8	22.2	23.7	24.3	25.4	24.6	20.8	23.6	25.1	25.4	23.1	23.1	23.8	22.9	20.3	8.7	1.8	1.6
Information	264.1	11.7	2.2	4.6	8.2	9.4	9.3	10.0	10.0	10.5	10.7	10.5	11.6	12.2	12.7	12.2	13.0	13.6	14.0	13.2	13.0	13.4	13.8	13.7	11.5	5.8	5.2
Finance, Insurance	431.6	19.9	10.0	18.1	27.9	24.8	22.5	22.5	21.0	21.0	20.1	18.7	20.1	20.5	20.8	18.7	19.6	20.1	20.0	16.7	15.5	15.8	16.0	15.3	9.9	-2.0	-1.8
Real Estate, Rental, Leasing	970.3	43.1	7.4	17.4	30.5	35.0	35.1	37.5	37.7	39.4	40.2	39.7	43.0	45.2	47.0	45.5	47.9	49.7	50.9	47.7	46.9	47.8	48.5	47.8	40.7	22.2	19.7
Profess, Tech Services	561.6	25.6	4.8	10.9	20.4	23.2	23.0	24.0	24.8	24.9	24.0	26.0	27.2	28.4	26.7	28.1	28.8	29.0	26.5	25.1	25.5	25.9	25.4	19.5	8.2	7.1	
Mngmt of Co, Enter	385.7	17.0	10.7	13.3	15.5	15.9	17.1	17.2	17.3	17.5	16.1	16.5	16.8	17.4	17.1	17.5	17.6	17.7	16.7	16.3	16.4	18.3	18.4	17.4	17.4	2.7	0.7
Admin, Waste Services	229.2	10.5	2.0	4.8	9.0	10.2	9.7	10.1	9.8	10.1	10.1	9.6	10.6	11.2	11.5	10.5	11.2	11.6	11.7	10.6	10.2	10.4	10.6	10.3	7.8	2.9	2.6
Educational Services	58.5	2.5	0.3	0.8	1.4	1.7	1.7	1.9	2.0	2.1	2.2	2.2	2.5	2.6	2.7	2.7	2.9	3.0	3.1	3.0	3.1	3.1	3.2	3.2	2.9	2.0	1.9
Health Care, Social Asst	586.0	25.6	4.9	11.2	19.5	21.2	19.8	21.1	20.6	21.7	22.1	21.8	24.4	25.9	26.9	25.9	27.8	29.6	30.8	29.2	29.6	31.0	31.9	31.8	27.4	15.2	14.8
Arts, Enter, Rec	105.2	4.5	0.6	1.5	2.6	3.0	3.0	3.3	3.3	3.6	3.7	3.8	4.2	4.5	4.8	4.8	5.2	5.5	5.8	5.5	5.6	5.9	6.1	6.2	5.6	3.5	3.4
Accom, Food Services	190.3	8.4	1.3	3.1	5.8	6.7	6.7	7.2	7.3	7.7	7.9	7.9	8.5	8.9	9.2	8.9	9.3	9.6	9.8	9.3	9.2	9.3	9.3	9.1	8.0	5.3	4.9
Other Services (excl Gov)	187.9	8.5	1.7	3.9	7.3	8.1	7.7	8.0	7.8	8.1	8.1	7.8	8.6	8.9	9.1	8.6	9.0	9.4	9.5	8.8	8.6	8.8	8.9	8.7	6.7	3.0	2.8

Output is the dollar value of all goods and services produced in the region, including all intermediate goods as well as value added.

*Annual average values refer to years 1 - 20.

Source: Results from the REMI PI+ regional economic forecasting model.

**Appendix Table A14: Total Economic Impacts - Production/Post-Production Phase of the Rosemont Copper Project - Private Non-Farm Employment by Industry
State of Arizona**

Industry/Year	Annual Ave.*	PP2	PP1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Total Non-Farm Private Sector	2,299	585	1,338	2,270	2,489	2,393	2,445	2,373	2,397	2,361	2,263	2,377	2,428	2,474	2,300	2,378	2,416	2,409	2,138	2,027	2,037	2,036	1,964	1,542	505	413
Forestry, Fishing, Other	1	0	1	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0
Mining	388	132	348	409	411	413	412	412	410	408	406	407	406	426	425	425	425	424	331	301	301	301	301	298	-7	-6
Utilities	51	3	14	54	60	57	56	56	56	54	51	52	52	52	51	50	50	49	47	42	41	41	41	13	2	2
Construction	226	42	114	232	293	296	305	287	280	267	241	250	249	240	211	208	208	203	176	159	150	139	123	73	-31	-73
Manufacturing	68	14	45	97	104	100	94	92	87	79	68	70	70	74	61	63	60	54	45	37	37	39	37	16	-4	-3
Wholesale Trade	74	17	50	88	97	96	95	95	91	87	76	79	80	85	70	74	70	64	55	45	45	46	44	28	11	10
Retail Trade	240	54	123	222	245	233	243	236	242	240	232	247	254	257	241	249	255	256	237	230	231	230	222	183	102	91
Transp, Warehousing	154	14	36	154	197	158	165	144	155	156	164	166	171	163	134	152	160	159	142	140	143	135	116	41	0	0
Information	24	8	16	27	29	27	27	26	26	25	23	24	25	25	22	23	23	20	19	19	19	19	18	14	6	5
Finance, Insurance	79	60	103	151	126	110	105	95	92	84	76	79	78	77	67	68	67	65	52	47	47	46	43	27	-7	-5
Real Estate, Rental, Leasing	163	30	68	120	138	138	146	146	152	154	152	164	171	177	171	179	185	189	178	175	177	179	176	151	88	78
Profess, Tech Services	199	44	97	181	203	198	204	201	205	203	192	206	213	220	204	212	215	213	191	178	179	181	175	129	45	37
Mngmt of Co, Enter	71	56	67	77	77	82	80	79	78	77	69	70	70	71	68	68	68	67	62	59	59	65	64	59	7	0
Admin, Waste Services	113	29	67	124	136	125	127	120	120	117	108	118	121	122	109	114	116	115	101	95	95	95	90	64	16	14
Educational Services	42	6	14	25	30	30	33	33	36	37	37	41	44	46	45	48	50	52	50	50	51	52	52	47	32	30
Health Care, Social Asst	215	44	98	170	185	173	184	180	188	191	188	209	220	228	218	233	245	253	240	242	251	256	253	218	129	125
Arts, Enter, Rec	57	11	25	42	46	45	48	48	50	51	51	55	58	61	59	62	65	67	63	63	65	66	66	58	35	33
Accom, Food Services	135	21	52	95	110	110	119	121	127	129	128	139	145	149	143	149	153	155	147	144	145	145	142	123	81	75
Other Services (excl Gov)	116	31	69	123	131	120	122	116	118	116	109	118	121	122	112	117	120	120	109	105	106	106	101	76	29	27

Employment includes full-time and part-time jobs by place of work. Employees, sole proprietors, and active partners are included, but unpaid family workers and volunteers are excluded
Public sector and farm workers are excluded.

*Annual average values refer to years 1 - 20.

Source: Results from the REMI PI+ regional economic forecasting model.

**Appendix Table A15: Total Economic Impacts - Production/Post-Production Phase of the Rosemont Copper Project - Earnings by Place of Work by Industry
State of Arizona
(Millions of 2008 \$)**

Industry/Year	Total	Annual																									
		Ave.*	PP2	PP1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Total Non-Farm Private Sector	3,796.3	173.9	35.5	83.7	139.3	157.9	159.3	166.5	166.9	171.5	172.1	168.3	178.4	184.8	192.0	183.4	188.8	194.0	196.5	176.4	168.3	170.5	173.2	170.2	137.0	37.1	24.7
Forestry, Fishing, Other	1.5	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mining	840.8	38.3	10.5	28.0	33.1	34.1	35.0	35.6	36.3	36.9	37.5	38.3	39.3	40.1	42.8	43.3	44.1	45.1	46.2	37.0	34.4	35.1	35.8	36.6	37.1	-0.7	-0.6
Utilities	149.3	7.2	0.4	1.7	6.3	7.2	7.0	7.0	7.1	7.3	7.2	6.9	7.2	7.3	7.5	7.6	7.6	7.6	7.7	7.5	6.9	6.9	6.9	7.0	2.5	0.5	0.4
Construction	277.3	13.6	2.0	5.8	11.8	15.4	16.1	17.0	16.5	16.5	16.1	15.1	15.8	15.9	15.6	14.3	12.4	12.5	12.4	11.0	10.1	9.5	8.9	8.0	5.0	-1.8	-4.8
Manufacturing	244.0	11.5	1.2	4.0	9.3	11.1	11.5	11.9	12.3	12.5	12.1	11.3	11.9	12.4	13.2	11.9	12.5	12.5	12.2	11.1	10.0	10.0	10.5	10.4	6.4	1.4	0.4
Wholesale Trade	260.9	12.0	1.4	4.4	8.2	9.9	10.6	11.2	11.9	12.0	12.1	11.5	12.4	13.1	14.3	12.9	13.8	13.9	13.5	12.3	11.1	11.2	11.8	11.5	8.5	4.1	3.2
Retail Trade	325.5	14.3	1.9	4.6	8.6	10.2	10.4	11.3	11.5	12.2	12.7	12.7	13.9	14.8	15.4	15.1	16.0	16.9	17.6	16.9	17.0	17.6	18.0	17.9	15.5	9.2	7.7
Transp, Warehousing	181.0	8.7	0.7	1.9	7.1	9.3	7.9	8.4	7.6	8.3	8.4	9.0	9.2	9.7	9.4	8.1	9.1	9.6	9.7	8.9	8.9	9.1	8.7	7.7	3.5	0.7	0.4
Information	72.0	3.3	0.6	1.2	2.2	2.6	2.7	2.9	3.0	3.1	3.1	3.0	3.3	3.4	3.5	3.4	3.6	3.7	3.8	3.6	3.5	3.6	3.6	3.5	2.9	1.3	1.0
Finance, Insurance	188.8	8.7	3.7	6.6	10.2	9.4	9.0	9.2	8.8	9.0	8.7	8.3	8.9	9.1	9.2	8.5	8.9	9.1	9.2	7.9	7.5	7.6	7.6	7.4	5.1	0.1	-0.2
Real Estate, Rental, Leasing	85.1	3.8	0.7	1.5	2.7	3.2	3.3	3.5	3.5	3.6	3.7	3.6	3.9	4.1	4.2	4.0	4.2	4.4	4.4	4.1	4.0	4.1	4.1	4.0	3.4	1.6	1.2
Profess, Tech Services	286.1	13.2	2.5	5.7	10.6	12.4	12.4	12.9	12.9	13.3	13.3	12.7	13.7	14.2	14.7	13.8	14.4	14.7	14.7	13.3	12.6	12.6	12.7	12.3	9.1	2.8	1.7
Mngmt of Co, Enter	174.9	7.7	4.7	5.9	6.8	7.1	7.7	7.8	7.8	7.9	7.9	7.3	7.6	7.7	7.9	7.8	8.0	8.1	8.1	7.7	7.5	7.5	8.3	8.3	7.9	1.2	0.2
Admin, Waste Services	136.3	6.3	1.1	2.6	4.9	5.8	5.8	6.1	6.0	6.2	6.2	6.0	6.5	6.8	6.9	6.4	6.7	6.9	7.0	6.4	6.2	6.2	6.2	5.9	4.6	1.8	1.2
Educational Services	36.8	1.6	0.2	0.5	0.9	1.1	1.2	1.3	1.3	1.4	1.4	1.5	1.6	1.7	1.8	1.7	1.8	1.9	2.0	1.9	1.9	1.9	2.0	1.9	1.8	1.2	1.1
Health Care, Social Asst	334.3	14.7	2.6	5.8	10.3	11.7	11.4	12.2	12.2	12.7	13.0	12.9	14.2	15.0	15.6	15.1	16.0	16.9	17.6	16.8	17.0	17.6	17.9	17.8	15.5	8.8	7.8
Arts, Enter, Rec	40.7	1.8	0.3	0.6	1.1	1.2	1.3	1.4	1.4	1.5	1.5	1.5	1.7	1.8	1.9	1.9	2.0	2.1	2.2	2.1	2.1	2.2	2.3	2.3	2.1	1.2	1.1
Accom, Food Services	81.3	3.6	0.5	1.3	2.3	2.8	2.9	3.2	3.2	3.4	3.5	3.4	3.7	3.9	4.0	3.9	4.0	4.1	4.2	4.0	3.9	3.9	3.9	3.8	3.4	2.2	1.9
Other Services (excl Gov)	79.5	3.6	0.7	1.6	2.9	3.3	3.2	3.3	3.3	3.4	3.4	3.3	3.6	3.8	3.8	3.7	3.8	4.0	4.1	3.8	3.7	3.8	3.8	3.7	3.0	1.5	1.2

Earnings by place of work is the sum of wage and salary disbursements, supplements to wages and salaries, and proprietors' income.

Annual average values refer to years 1 - 20.

Source: Results from the REMI PI+ regional economic forecasting model.

Appendix Table A16: Total Economic Impacts - Production/Post-Production Phase of the Rosemont Copper Project - Output by Industry
United States of America
(Millions of 2008 \$)

Industry/Year	Annual		PP2	PP1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
	Total	Ave.*																									
Total Non-Farm Private Sector	27,267.7	1,309.4	166.1	477.7	1,213.9	1,489.9	1,254.3	1,372.2	1,247.0	1,342.9	1,334.0	1,256.9	1,389.5	1,447.2	1,422.8	1,161.6	1,320.6	1,399.6	1,383.1	1,273.1	1,252.2	1,290.3	1,259.3	1,078.2	497.3	-28.8	-33.4
Forestry, Fishing, Other	10.8	0.5	0.1	0.3	0.7	0.8	0.7	0.8	0.7	0.7	0.6	0.5	0.6	0.6	0.5	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.2	0.2	0.1	0.0	0.0
Mining	11,409.7	550.3	59.1	166.5	508.6	682.3	534.3	607.2	521.3	576.0	586.0	589.8	577.1	592.7	555.9	438.8	519.4	560.8	565.3	530.4	539.9	554.9	523.3	442.2	176.7	0.9	0.4
Utilities	1,092.5	53.1	3.0	14.1	51.0	57.4	54.7	54.2	55.6	53.9	50.8	54.0	54.7	55.8	54.4	55.1	55.2	55.1	52.7	48.3	48.1	48.3	48.2	14.3	-0.2	-0.4	
Construction	406.4	18.9	2.5	7.2	16.0	19.9	17.8	19.6	18.6	19.8	19.3	17.5	21.1	21.9	21.8	18.3	19.0	19.9	19.6	18.0	17.7	18.3	18.2	15.6	11.0	4.3	3.5
Manufacturing	4,234.2	204.0	21.4	82.1	198.4	225.4	209.1	214.1	210.8	220.3	207.4	184.3	214.1	225.4	236.0	196.7	215.8	220.3	210.2	188.8	173.7	179.8	185.5	164.1	73.1	-11.2	-11.2
Wholesale Trade	1,059.8	51.0	5.7	20.7	43.9	50.8	49.1	52.5	51.7	53.8	52.4	45.9	55.7	59.3	63.0	51.2	56.8	57.9	54.2	48.6	43.4	44.6	46.3	39.5	19.0	-2.8	-3.4
Retail Trade	727.5	34.9	5.4	14.4	31.0	35.9	30.1	32.9	30.0	31.7	31.3	27.2	36.9	39.2	39.7	31.7	35.9	39.6	40.1	36.7	37.2	38.8	39.1	32.1	17.9	-3.2	-4.0
Transp, Warehousing	1,291.8	62.8	4.8	14.4	56.5	72.7	58.8	62.7	55.8	60.6	61.2	62.7	67.4	70.9	68.4	56.0	64.3	68.4	68.3	62.2	61.9	63.8	61.1	52.2	18.1	-0.7	-0.8
Information	812.5	38.9	5.4	14.7	31.6	37.3	32.4	36.8	34.0	37.3	36.7	31.6	42.5	45.6	45.5	37.0	41.8	45.4	44.3	40.8	40.1	42.3	41.8	34.0	19.7	-3.0	-3.0
Finance, Insurance	1,677.1	79.1	20.0	42.4	75.2	77.1	66.6	73.8	69.8	75.2	75.4	66.4	86.7	90.6	90.4	74.9	84.2	91.2	89.5	80.8	79.7	83.6	81.1	69.2	41.1	-4.5	-3.1
Real Estate, Rental, Leasing	996.9	47.4	7.9	22.4	44.2	50.7	43.9	47.6	43.9	46.4	46.4	40.5	51.4	53.9	54.2	45.1	51.0	53.2	52.0	47.0	45.8	46.4	46.1	39.2	23.0	-2.2	-3.1
Profess, Tech Services	1,203.6	57.4	8.0	23.2	50.8	59.3	52.3	57.2	52.9	56.2	56.3	47.7	62.7	66.8	67.3	55.4	61.9	64.5	63.5	57.5	55.5	57.7	56.0	47.4	26.1	-1.3	-1.3
Mngmt of Co, Enter	506.9	23.3	8.4	16.0	23.5	25.4	25.6	25.9	25.1	25.7	25.1	21.4	24.0	24.5	25.2	22.8	23.7	24.1	23.2	20.5	19.3	19.4	21.9	19.8	14.7	2.3	-0.6
Admin, Waste Services	411.2	19.6	2.8	7.8	17.1	20.2	17.5	19.3	17.8	19.3	18.7	16.6	21.7	23.0	23.1	18.7	21.0	22.0	21.7	19.9	19.3	19.9	19.6	16.1	9.5	-0.6	-0.8
Educational Services	82.0	3.9	0.5	1.5	3.5	4.2	3.2	3.8	3.1	3.5	3.5	2.7	4.4	4.9	4.5	3.5	4.2	4.6	4.6	4.2	4.3	4.4	4.2	3.3	2.0	-0.2	-0.3
Health Care, Social Asst	735.2	35.1	6.3	16.3	33.7	38.1	30.9	34.3	30.3	32.5	31.9	27.1	37.8	39.9	38.6	30.3	35.7	39.6	39.1	36.1	37.7	38.8	38.1	31.1	18.0	-3.8	-3.2
Arts, Enter, Rec	120.4	5.7	0.9	2.5	4.9	5.6	4.8	5.3	4.9	5.3	5.2	4.6	6.0	6.5	6.6	5.4	6.2	6.7	6.7	6.1	6.0	6.4	6.2	5.4	3.3	-0.5	-0.5
Accom, Food Services	190.1	9.1	1.6	4.5	9.3	10.5	8.9	9.6	8.8	9.0	8.9	7.5	9.8	10.6	10.2	8.2	9.6	10.1	9.8	8.7	8.6	8.7	8.3	6.8	3.6	-0.9	-0.8
Other Services (excl Gov)	299.0	14.3	2.4	6.6	14.1	16.2	13.5	14.6	13.4	14.2	13.8	12.0	15.7	16.2	16.0	12.8	14.5	15.7	15.3	14.0	13.6	14.2	14.1	11.7	6.1	-1.0	-0.7

Output is the dollar value of all goods and services produced in the region, including all intermediate goods as well as value added.

*Annual average values refer to years 1 - 20.

Source: Results from the REMI PI+ regional economic forecasting model.

**Appendix Table A17: Total Economic Impacts - Production/Post-Production Phase of the Rosemont Copper Project - Private Non-Farm Employment by Industry
United States of America**

Industry/Year	Annual Ave.*	PP2	PP1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Total Non-Farm Private Sector	3,749	824	2,214	4,181	4,697	4,062	4,261	3,913	4,036	3,898	3,432	4,125	4,249	4,191	3,439	3,745	3,868	3,733	3,273	3,104	3,145	3,057	2,573	1,454	-238	-243
Forestry, Fishing, Other	8	2	4	9	11	10	10	9	10	9	8	9	9	8	7	7	7	6	6	5	5	5	4	3	1	1
Mining	520	192	527	543	563	559	558	561	555	544	535	541	542	567	561	561	560	558	454	410	409	409	408	382	-2	-2
Utilities	52	4	16	58	65	61	59	58	58	56	52	54	53	54	51	51	50	49	46	41	40	40	39	11	-1	-1
Construction	146	21	63	139	172	151	165	156	163	157	140	166	171	167	138	142	146	142	129	125	128	125	105	72	25	20
Manufacturing	326	54	191	433	479	433	427	407	404	371	315	351	355	362	290	307	299	273	235	202	201	202	175	67	-22	-21
Wholesale Trade	141	26	92	185	205	189	193	180	179	166	138	160	162	165	126	134	129	116	97	82	80	80	63	24	-15	-15
Retail Trade	272	64	168	346	387	314	330	287	291	277	229	303	311	303	230	250	270	260	227	219	223	217	168	80	-39	-39
Transp, Warehousing	386	36	106	395	500	401	421	371	397	395	397	422	439	419	337	381	399	392	350	342	348	329	276	92	-14	-13
Information	62	15	38	77	87	71	77	68	71	67	54	71	72	69	53	58	60	56	49	47	47	44	34	18	-6	-6
Finance, Insurance	212	92	178	297	284	236	251	228	237	227	191	243	245	233	185	201	208	198	172	163	166	155	126	67	-16	-13
Real Estate, Rental, Leasing	116	24	65	126	145	122	131	116	122	120	102	130	135	133	105	120	123	117	103	98	98	95	75	34	-27	-30
Profess, Tech Services	390	60	172	376	438	383	414	382	402	398	333	434	458	455	369	410	423	410	368	350	361	346	287	152	-18	-20
Mngmt of Co, Enter	75	33	60	88	94	93	93	88	89	85	72	79	79	80	71	73	72	69	59	55	54	60	53	38	5	-2
Admin, Waste Services	252	44	119	259	301	256	277	250	267	254	225	285	297	292	233	257	267	257	229	221	221	217	173	99	-12	-13
Educational Services	66	9	25	59	71	55	65	53	59	60	46	75	83	77	58	70	77	77	71	71	73	69	55	31	-5	-6
Health Care, Social Asst	296	61	154	314	357	283	313	270	287	279	232	326	342	328	250	295	324	316	289	295	303	291	230	127	-43	-39
Arts, Enter, Rec	74	15	40	75	85	73	78	71	74	73	63	80	84	84	67	76	80	79	69	67	70	67	56	32	-9	-9
Accom, Food Services	141	26	73	149	171	144	156	141	144	143	118	156	166	159	124	147	153	148	130	126	129	122	100	50	-19	-17
Other Services (excl Gov)	214	46	123	253	282	228	243	217	227	217	182	240	246	236	184	205	221	210	190	185	189	184	146	75	-21	-18

Employment includes full-time and part-time jobs by place of work. Employees, sole proprietors, and active partners are included, but unpaid family workers and volunteers are excluded
Public sector and farm workers are excluded.

*Annual average values refer to years 1 - 20.

Source: Results from the REMI PI+ regional economic forecasting model.

Appendix Table A18: Total Economic Impacts - Production/Post-Production Phase of the Rosemont Copper Project - Earnings by Place of Work by Industry
United States of America
(Millions of 2008 \$)

Industry/Year	Total	Annual Ave.*	PP2	PP1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Total Non-Farm Private Sector	7,807.8	362.6	54.2	150.7	279.8	328.7	311.9	336.8	330.5	350.1	351.3	328.6	382.4	402.9	413.0	370.7	398.2	413.7	412.5	379.9	368.4	377.0	374.4	340.9	240.0	64.4	46.9
Forestry, Fishing, Other	8.3	0.4	0.0	0.1	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.2	0.1	0.1
Mining	1,206.3	54.7	16.3	45.2	47.8	50.7	51.2	52.0	53.1	53.7	53.8	53.8	55.9	56.7	60.1	60.7	62.0	63.0	64.1	53.6	49.6	50.3	50.8	51.5	49.2	0.8	0.6
Utilities	198.0	9.5	0.6	2.5	8.7	9.9	9.5	9.5	9.5	9.8	9.6	9.1	9.7	9.9	10.1	9.9	10.0	10.1	10.1	9.7	9.0	9.0	9.0	8.9	3.2	0.5	0.3
Construction	256.7	11.7	1.1	3.4	7.6	10.0	9.7	10.9	10.9	11.5	11.7	11.1	12.7	13.4	13.4	12.0	12.3	12.8	12.9	12.3	12.2	12.5	12.3	11.1	9.0	5.5	4.5
Manufacturing	1,257.2	59.0	4.9	18.5	44.9	53.7	52.9	55.9	56.8	60.3	58.8	54.4	61.6	65.2	68.4	60.6	65.1	66.4	64.8	60.4	57.2	58.5	59.6	55.2	33.5	11.2	8.3
Wholesale Trade	510.4	24.0	2.2	7.9	16.8	20.4	20.7	22.5	22.6	23.9	23.9	21.8	25.7	27.4	29.1	25.2	27.3	27.8	26.9	25.0	23.2	23.4	24.0	21.4	13.8	4.5	2.9
Retail Trade	376.9	17.5	2.1	5.7	12.2	14.9	13.6	15.2	14.5	15.5	15.7	14.3	18.2	19.3	19.9	17.2	18.8	20.3	20.7	19.5	19.7	20.6	20.6	18.2	12.8	4.1	3.1
Transp, Warehousing	541.4	25.9	1.9	5.8	21.4	27.8	23.3	24.9	22.7	24.6	25.0	25.7	27.7	29.2	28.5	24.1	27.1	28.6	28.7	26.5	26.4	27.0	25.9	22.7	10.7	3.0	2.2
Information	302.3	14.1	1.5	4.2	9.0	11.2	10.5	12.1	11.8	13.0	13.1	11.9	15.0	16.2	16.4	14.3	15.7	16.7	16.8	15.9	15.7	16.4	16.0	14.0	9.9	3.0	2.1
Finance, Insurance	759.5	35.1	7.6	16.1	28.4	30.4	27.9	31.3	30.6	33.2	33.6	30.7	38.0	40.1	40.2	35.2	38.3	40.7	40.4	37.6	37.1	38.4	37.1	32.8	22.8	6.2	4.8
Real Estate, Rental, Leasing	109.5	5.1	0.7	1.9	3.7	4.5	4.3	4.7	4.5	4.8	4.9	4.6	5.4	5.7	5.8	5.2	5.6	5.8	5.8	5.4	5.3	5.4	5.3	4.7	3.4	1.2	0.8
Profess, Tech Services	794.8	37.1	4.3	12.6	27.3	33.2	30.7	33.9	32.5	34.9	35.5	31.6	39.7	42.6	43.4	37.8	41.4	43.0	42.8	40.1	39.2	40.3	38.9	34.2	22.9	7.0	5.1
Mngmt of Co, Enter	275.2	12.5	3.8	7.2	10.8	12.0	12.5	12.9	12.6	13.1	13.1	11.6	12.9	13.4	13.7	12.7	13.2	13.4	13.2	12.0	11.6	11.6	12.5	11.5	9.1	3.2	1.6
Admin, Waste Services	262.6	12.2	1.4	3.9	8.6	10.7	9.9	11.1	10.7	11.6	11.6	10.8	13.2	14.0	14.2	12.4	13.5	14.2	14.1	13.2	13.1	13.3	13.0	11.3	8.0	2.8	2.0
Educational Services	69.6	3.2	0.3	0.9	2.2	2.8	2.4	2.9	2.6	2.8	2.9	2.6	3.5	3.8	3.7	3.2	3.6	3.8	3.8	3.7	3.7	3.8	3.6	3.1	2.3	0.9	0.7
Health Care, Social Asst	545.7	25.1	3.3	8.9	18.2	21.9	19.5	22.2	20.8	22.5	22.8	20.7	26.4	28.2	28.1	24.4	27.1	29.2	29.4	28.2	28.8	29.6	29.1	25.5	18.8	6.7	5.2
Arts, Enter, Rec	66.2	3.0	0.4	1.1	2.0	2.5	2.3	2.6	2.5	2.7	2.8	2.6	3.1	3.4	3.5	3.1	3.4	3.6	3.6	3.5	3.4	3.6	3.5	3.2	2.4	0.8	0.6
Accom, Food Services	104.1	4.8	0.7	1.8	3.8	4.6	4.3	4.7	4.5	4.7	4.7	4.3	5.2	5.5	5.5	4.8	5.3	5.5	5.4	5.0	4.9	5.0	4.8	4.2	3.0	1.1	0.8
Other Services (excl Gov)	163.3	7.6	1.0	2.9	6.0	7.2	6.5	7.1	6.7	7.2	7.2	6.6	8.1	8.6	8.6	7.4	8.1	8.6	8.5	8.1	7.9	8.1	8.0	7.0	4.9	1.7	1.3

Earnings by place of work is the sum of wage and salary disbursements, supplements to wages and salaries, and proprietors' income.

Annual average values refer to years 1 - 20.

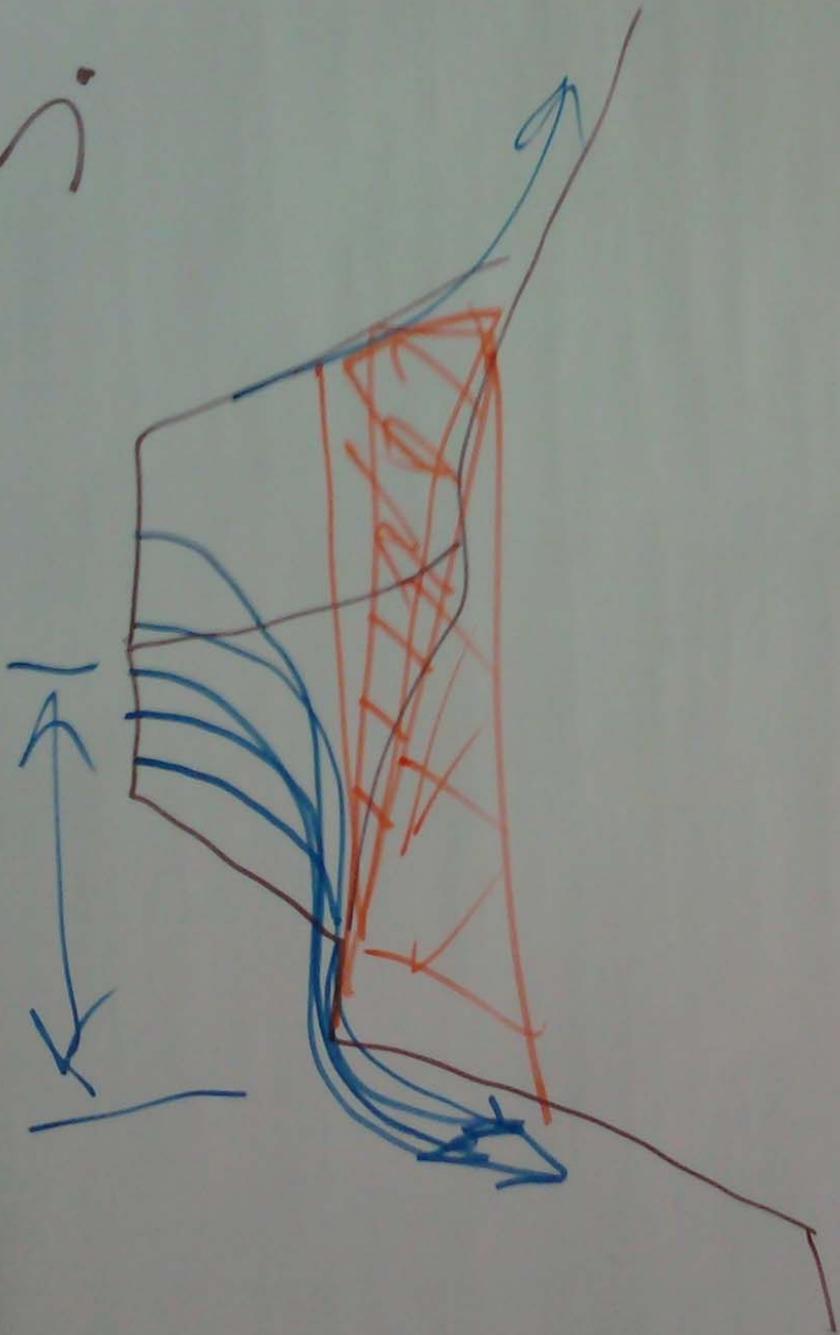
Source: Results from the REMI PI+ regional economic forecasting model.



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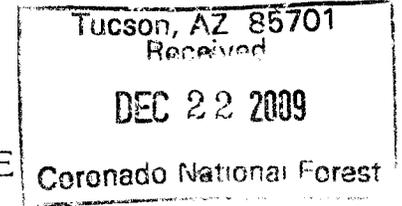


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COUNTY ADMINISTRATOR'S OFFICE

PIMA COUNTY GOVERNMENTAL CENTER
130 W. CONGRESS, TUCSON, AZ 85701-1317
(520) 740-8661 FAX (520) 740-8171

C.H. HUCKELBERRY
County Administrator

December 18, 2009

Jeanine Derby, Forest Supervisor
Coronado National Forest
300 W. Congress Street
Tucson, Arizona 85701

Re: **Rosemont Copper – Upper McCleary Alternative**

Dear Ms. Derby:

On December 10, 2009, Pima County and Regional Flood Control District staff participated in a field trip led by Coronado National Forest staff to the Rosemont project site. During this field visit, Pima County staff identified a new alternative for consideration in the Draft Environmental Impact Statement.

This alternative is presented in green on the attached figure, superimposed on the configuration offered by Rosemont. This latest Upper McCleary Alternative does not replace Pima County's preference for the no-action alternative, but it is intended to respond to your call for additional alternatives. Because three dimensional data have not been provided to the Cooperators, we are unable to develop and evaluate this alternative (or any others) as we would like. Thus, this alternative is not one that we could say would be preferable.

The Upper McCleary Alternative utilizes Rosemont's fee-owned lands in the Upper McCleary Canyon watershed for the *temporary* storage of a portion of the waste rock from the Rosemont open-pit. Under this alternative, complete removal of the waste from Upper McCleary into the Rosemont pit is proposed. The Upper McCleary temporary storage area is adjacent to and of similar elevation as the Rosemont open pit; and as such, it is possible the pit could be completely backfilled with the waste rock from the Upper McCleary temporary storage area as well as from other sites. In addition, it is recommended that the potential to relocate the plant site and heap leach to further reduce the long-term impact upon Forest lands be examined.

Ms. Jeanine Derby
Re: Rosemont Copper – Upper McCleary Alternative
December 18, 2009
Page 2

The Upper McCleary Temporary Storage and Full Pit Reclamation Alternative is unique in that it provides an opportunity to provide complete or near complete reclamation of the Rosemont open pit. This alternative has the following potential benefits:

1. Reduction of impact on water resources. By backfilling the pit completely, the long- term impact of the pit on water resources would be reduced, since there would be no pit lake. In addition, through appropriate grading after reclamation, this area, due its location and elevation, may serve as a way to promote recharge within the reclaimed pit.
2. Reduction of impact to Forest lands. Using Rosemont fee-owned lands would reduce the footprint of the waste rock pile and other uses on Forest lands, allowing some of those areas to remain in their natural state. With appropriate timing and use of land, this alternative allows for the temporary use of Upper McCleary for waste rock storage. Upon removal of material to reclaim the pit, this area may be utilized for the copper ore bodies that are known to exist. Should the pit not be completely filled, the waste rock from those projects could be used to complete reclamation.
3. Remove the constructed conveyance. This alternative removes the need for the constructed conveyance to drain this basin through the proposed waste rock pile. The County and the District have concerns regarding the functionality of this conveyance in the long-term. Unlike other projects with life-spans measured in years or decades, the landform will be present in perpetuity. It will be necessary for the drain to function for this duration, which is unlikely. The Upper McCleary Temporary Storage and Full Pit Reclamation Alternative removes this issue, both during operation and after reclamation
4. Reduction of Impacts to Barrel Canyon. This alternative offers the potential to reduce impacts on Barrel and lower McCleary Canyon and associated cultural sites and riparian habitat mapped by the County and which serves as an integral part of the Sonoran Desert Conservation Plan. Barrel Canyon offers a connection between the upper elevations of the Santa Rita Range to the south and Davidson Canyon and the Rincon Mountains to the north.
5. Reduction of Visual Impacts. Augusta's preferred alternative features the so called "Rosemont Ridge Landform," which consists of tailings piles to block the view of the pit and mill from Scenic Highway 83. Backfilling the pit and

Ms. Jeanine Derby
Re: Rosemont Copper – Upper McCleary Alternative
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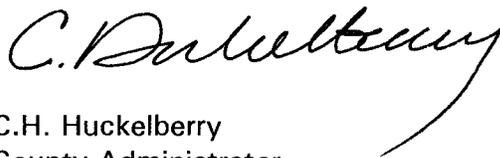
maximizing distance between the highway and the project reduces permanent visual impacts and may add greater stability and flexibility to the design of the remaining waste and tails.

6. Reduction of Cumulative Impacts. The Forest Service must consider the cumulative impacts that provision of infrastructure to Rosemont will have to the development of these sites in all alternatives. Rosemont's current mine plan proposal leaves open for exploitation three additional prospects, two of which are located east of the Santa Rita Ridge. The exploitation of these areas would require disposal of waste and tails in Sycamore Canyon and other parts of the forest closer to those prospects, precisely the areas left open by Rosemont's current proposal.

By explicitly providing for the development of the other two deposits, the Upper McCleary Temporary Storage and Full Pit Reclamation Alternative may minimize total cumulative impacts of developing the other two copper prospects that lie east of the Santa Rita Ridge. Once the temporary waste rock pile is backfilled into the pit, one or both of the copper prospects that lie east of the Santa Rita Ridge on Rosemont's projects could be mined at that time, utilizing the backfilled pit for a variety of mine facility uses.

We look forward to your review of the various alternatives we have proposed.

Sincerely,

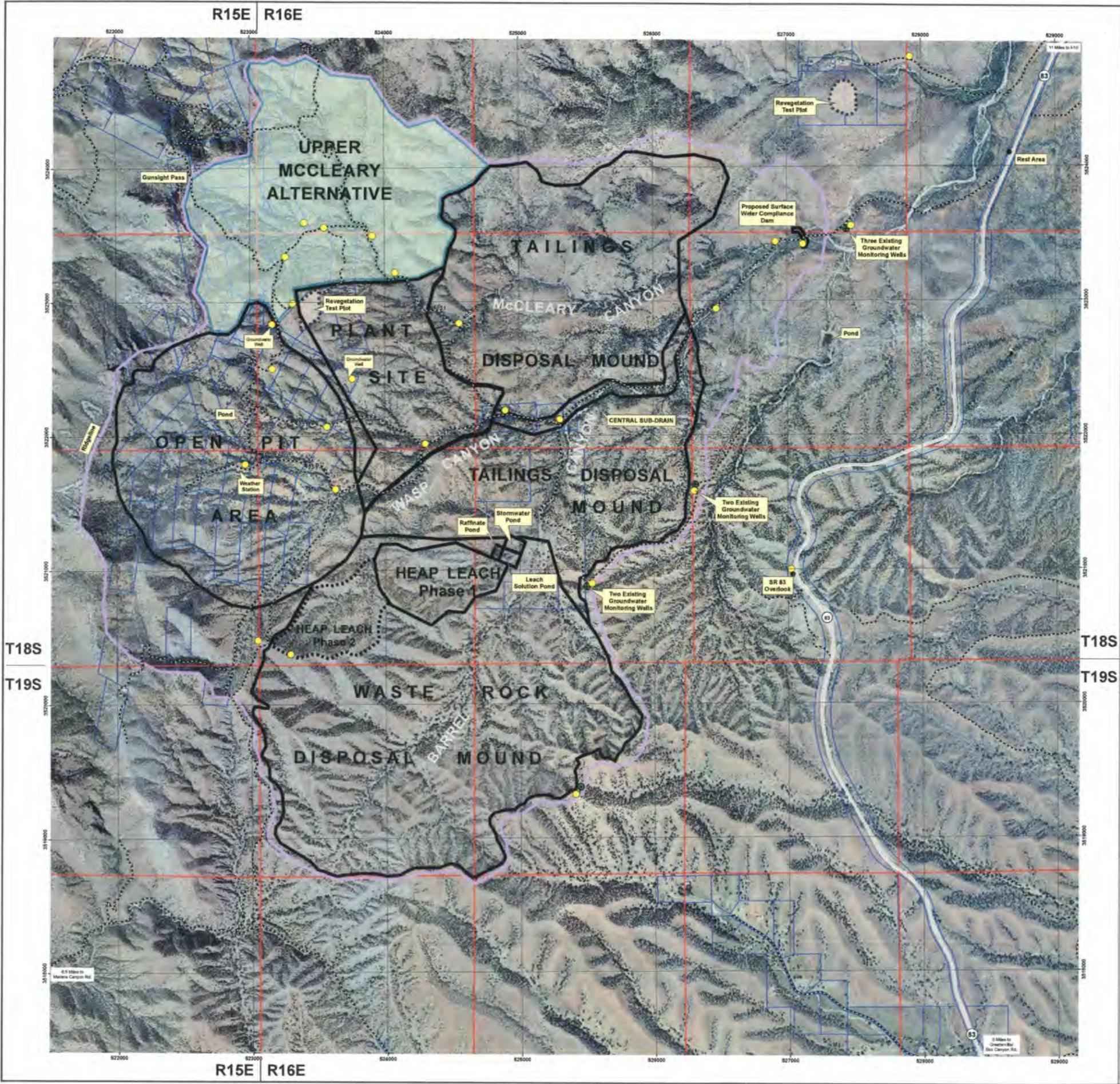


C.H. Huckelberry
County Administrator

CHH/mjk

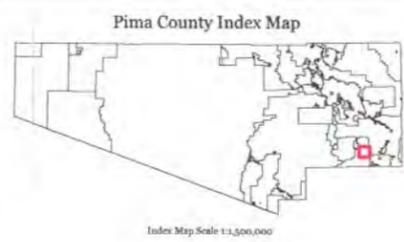
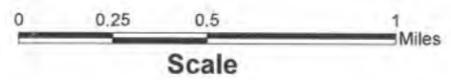
Attachment

c: Julia Fonseca, Environmental Planning Manager
Pima County Office of Conservation Science and Environmental Policy



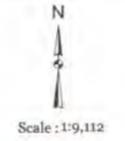
PROPOSED ROSEMONT COPPER MINE

- 11 ● Photo Points
- 2 ● Proposed Groundwater Compliance Wells (Existing)
- 4 ● Proposed Groundwater Compliance Wells (Planned)
- Unpaved Roads
- State Highway 83
- ▭ Rosemont Mine Facility Areas
- ▭ (Dotted) Revegetation Test Plot
- ▭ (Purple) Composite Watershed Boundary
- ▭ (Blue) Rosemont Copper Patented Parcels
- 01 Section Number and Boundary
- ▭ (Green) Upper McCleary Alternative



The information depicted on this display is the result of digital analysis performed on a variety of databases provided and maintained by several governmental agencies. The accuracy of the information presented is limited to the collective accuracy of these databases on the date of the analysis. The Pima County Information Technology Department's Geographic Information Services Division makes no claims regarding the accuracy of the information depicted herein.

This product is subject to the GIS Division's Disclaimer and Use Restrictions.



Pima County Geographic Information Services
 201 North Stone Avenue - 9th Floor
 Tucson, Arizona 85701-1207
 (520) 743-6677 - FAX: (520) 796-3429

October 2009



Partial Backfill Alternative

January 21, 2010
Cooperator's Meeting Presentation
February 3, 2010
ID Team Meeting

Partial Backfill Alternative

Considerations

- Be responsive to an Issue
- Minimize water that collects in the pit
- Return waste rock to the pit
- Minimize resources that are used in backfilling
- Minimize air impacts



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Resourceful.

Partial Backfill Alternative Environmental Considerations

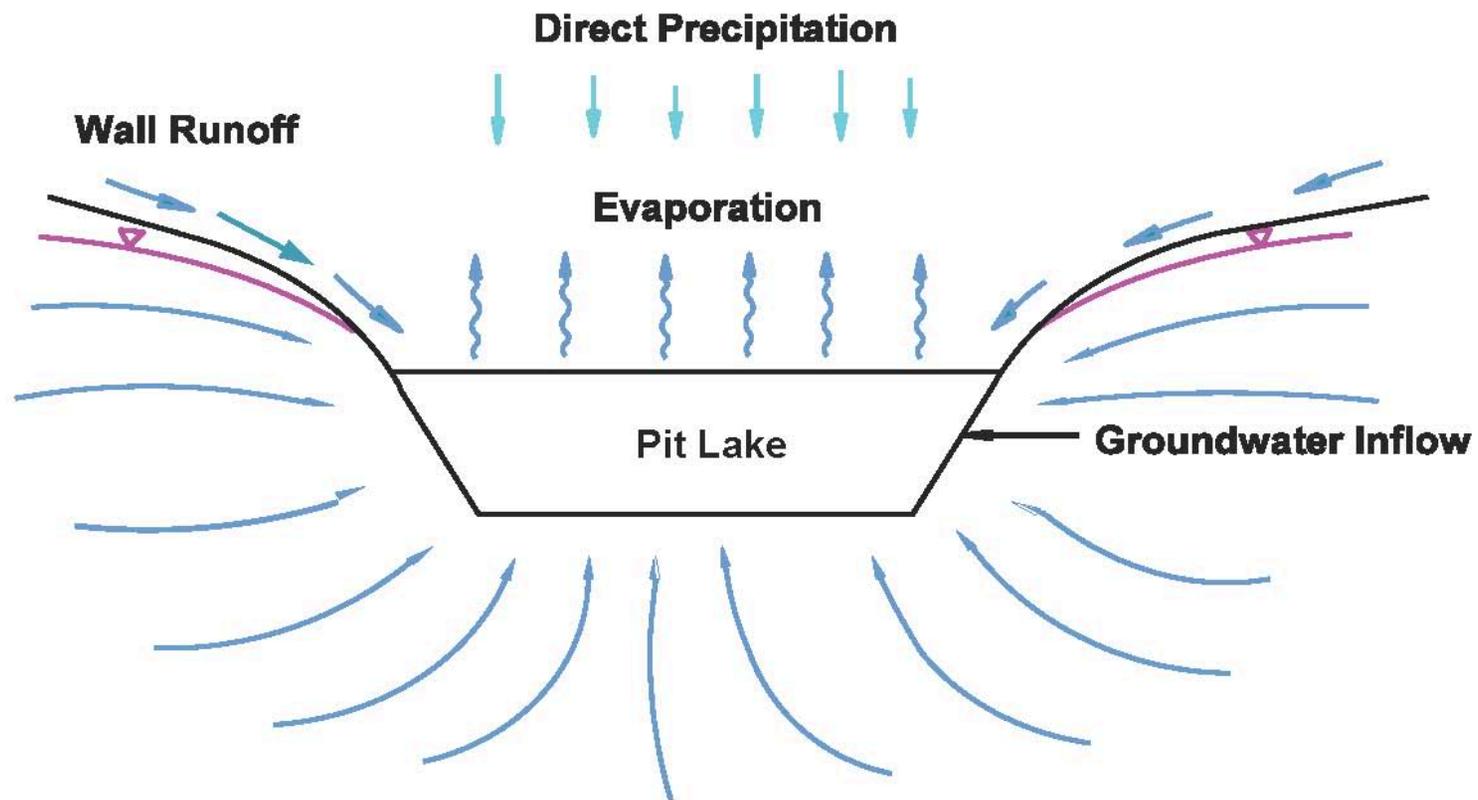
- Compliance with all applicable regulations including ADEQ BADCT and air regulations
- Maintain a Hydraulic Sink
- Geochemical considerations with the addition of a mix of finer grained materials
- Stormwater controls during backfill
- Effect on concurrent reclamation and on reclamation planning



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Pit Lake Development



Hydrogeologic Study Results

Period	Pit Lake Elevation (ft amsl)	Pit Lake Depth (feet)
Mine Closure	(None)	0
Closure + 20 years	3,591	541
Closure + 50 years	3,751	701
Closure + 100 years	3,869	819

- Backfill elevation – 3825 ft amsl (est.)
- Elevation was estimated to maintain sink (modeling to confirm elevation estimation with operational adjustments as necessary)

Other Considerations

- Heap Leach remains undisturbed
- Haulage fleet used will be consistent in size to current fleet
- Loading equipment (shovel used will be consistent with current loading equipment)
- Waste rock density is 11.95 ft³/ton
- Swell factor for the rock is 1.3



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Other Considerations

- Amount of material necessary for backfill is 90 million tons (46 million cubic yards)
- Allowance of 5% added for construction of ramps for downhill haulage
- Total material rehandled 94 million tons
- 36-months required to complete backfill
- Hauls will incorporate 3 switchbacks at -10% grade at a maximum 13 mph



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Backfill and Excavation Area

- Excavation on 50 foot benches
- Start elevation approx 5470 ft amsl
- Final elevation 5200 ft amsl
- Dumped into pit from 3825 ft elevation



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Productivity by Bench

Bench Elevation (ft amsl)	Tonnage (x 1,000)	Cumulative Tonnage (x 1,000)	Haulage Production (tons/hour)
5420	8,938	8,938	379
5400	18,435	27,373	387
5350	18,689	46,062	395
5300	16,277	62,338	403
5250	12,977	75,315	411
5200	8,720	84,036	419

This information was used to determine the appropriate haulage fleet for this activity matched to one shovel.



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Required Haulage Hours and Units

Post-Mining Year	Rehandle Tons (x 1,000)	CAT 793C Truck Fleet	
		Operating Hours	Units
1	28,774	74,740	16
2	28,853	72,439	16
3	26,409	64,021	15
Total	84,036	211,201	16

Modeling indicates that 16 trucks will be required in the first 19 months of the project and 15 for the remainder.

Support Equipment in Addition to Haulage Equipment

- One Electric Shovel
- One Front End Loader
- One 600 HP Track Dozer (D10)
- One 850 HP Track Dozer (D11)
- One 500 HP Wheel Dozer
- Two Graders
- Two Water Trucks



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Discussion Points/Conclusion

- Hydraulic – can maintain sink with partial backfill
- Economic – negative cost implications (~\$90 million)
- Energy/Resource Conservation – 3 additional operational years for electric and diesel use plus water for dust control
- Air Quality – 3 additional years of mining fugitives
- Employment – approximately 100 people for 3 years
- Reclamation– concurrent reclamation of area cannot be effectively started



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Discussion Points/Conclusion

- Visual Result – no appreciable change to overall landform (~6% of total material)
- Water Quality– potential for short term flow through condition
- Traffic – 3 additional years of 100 employees commuting
- Biology – continued operations presence for mining
- Future Mineral – sulfides at the bottom of the pit no longer accessible
- Pit Reservoir for Regional Water Storage – eliminates some storage that may otherwise available



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