NI 43-101 TECHNICAL REPORT
Feasibility Study
for the
PAN GOLD PROJECT
White Pine County, Nevada

PREPARED FOR MIDWAY GOLD CORP.

Effective date: November 15, 2011

Signature date: December 19, 2011

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2. I am a graduate of the University of Southern California with a Bachelor of Arts in Earth Science (1968), and an MSc. in Economic Geology from the University of Arizona in 1979, and have practiced my profession continuously since 1973.
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4. I have worked as a geologist for a total of 38 years since my graduation from university; as a graduate student, as an employee of a major mining company, a major engineering company, and as a consulting geologist.
5. I have read the definition of "qualified person" set out in NI 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
6. I am responsible for the preparation of the report titled "NI 43-101 Technical Report Feasibility Study for the Pan Gold Project, White Pine County, Nevada," effective date, November 15, 2011 (the "Technical Report"), with specific responsibility for oversight of the entire document.
7. I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading.

8. I do not hold, nor do I expect to receive, any securities or any other interest in any corporate entity, private or public, with interests in the properties that are the subject of this report or in the properties themselves, nor do I have any business relationship with any such entity apart from a professional consulting relationship with the issuer, nor to the best of my knowledge do I have any interest in any securities of any corporate entity with property within a two (2) kilometer distance of any of the subject properties.
9. I have read NI 43-101 and Form 43-101, and the Technical Report has been prepared in compliance with that instrument and form.
10. I consent to the filing of the Technical Report with any stock exchanges or other regulatory authority and any publication by them, including electronic publication in the public company files on the websites accessible by the public, of the Technical Report.

Dated this 19th day of December, 2011.

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5. I have read the definition of "qualified person" set out in NI 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
6. I am responsible for the preparation of the technical report titled "NI 43-101 Technical Report Feasibility Study for the Pan Gold Project, White Pine County, Nevada," effective date, November 15, 2011 (the "Technical Report"), with specific responsibility for Sections 14, 15, and 19 through 27.
7. I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading.

8. I do not hold, nor do I expect to receive, any securities or any other interest in any corporate entity, private or public, with interests in the properties that are the subject of this report or in the properties themselves, nor do I have any business relationship with any such entity apart from a professional consulting relationship with the issuer, nor to the best of my knowledge do I have any interest in any securities of any corporate entity with property within a two (2) kilometer distance of any of the subject properties.
9. I have read NI 43-101 and Form 43-101, and the Technical Report has been prepared in compliance with that instrument and form.
10. I consent to the filing of the Technical Report with any stock exchanges or other regulatory authority and any publication by them, including electronic publication in the public company files on the websites accessible by the public, of the Technical Report.

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2. I am a graduate of the Michigan Technological University of Michigan with a Bachelor of Science degree in Mining Engineering (1982).
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5. I have read the definition of "qualified person" set out in NI 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
6. I am responsible for the preparation of the report titled "NI 43-101 Technical Report Feasibility Study for the Pan Gold Project, White Pine County, Nevada," effective date, November 15, 2011 (the "Technical Report"), with specific responsibility for Sections 1, 9 through 13, and 16 through 18. I most recently visited the property May 27, 2010.
7. I have personally completed an independent review and analysis of the data and written information contained in this Technical Report.
8. I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading.

9. I do not hold, nor do I expect to receive, any securities or any other interest in any corporate entity, private or public, with interests in the properties that are the subject of this report or in the properties themselves, nor do I have any business relationship with any such entity apart from a professional consulting relationship with the issuer, nor to the best of my knowledge do I have any interest in any securities of any corporate entity with property within a two (2) kilometer distance of any of the subject properties.
10. I have read NI 43-101 and Form 43-101, and the Technical Report has been prepared in compliance with that instrument and form.
11. I consent to the filing of the Technical Report with any stock exchanges or other regulatory authority and any publication by them, including electronic publication in the public company files on the websites accessible by the public, of the Technical Report.

Dated this 19th day of December, 2011.

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2. I am a graduate of The Ohio State University with an MSc in Geology (1974), a PhD. in Geology from the University of Georgia (1980), and an M.B.A. from the University of Colorado at Denver (1991) and have practiced my profession continuously since 1978.
3. I am a member in good standing of the Mining and Metallurgical Society of America, member #01088QP.
4. I have worked as a geologist for a total of 40 years since my graduation from university; as a graduate student, as an employee of a major mining company, a major engineering company, and as a consulting geologist.
5. I have read the definition of "qualified person" set out in NI 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
6. I am responsible for the preparation of the report titled "NI 43-101 Technical Report Feasibility Study for the Pan Gold Project, White Pine County, Nevada," effective date, November 15, 2011 (the "Technical Report"), with specific responsibility for Sections 7 and 8.
7. I have personally completed an independent review and analysis of the data and written information contained in this Technical Report.
8. I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading.

9. I do not hold, nor do I expect to receive, any securities or any other interest in any corporate entity, private or public, with interests in the properties that are the subject of this report or in the properties themselves, nor do I have any business relationship with any such entity apart from a professional consulting relationship with the issuer, nor to the best of my knowledge do I have any interest in any securities of any corporate entity with property within a two (2) kilometer distance of any of the subject properties.
10. I have read NI 43-101 and Form 43-101, and the Technical Report has been prepared in compliance with that instrument and form.
11. I consent to the filing of the Technical Report with any stock exchanges or other regulatory authority and any publication by them, including electronic publication in the public company files on the websites accessible by the public, of the Technical Report.

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2. I am a graduate of the University of Montana with a Bachelor of Arts in Geology (1996), and I have practiced my profession continuously since 1997.
3. I am a licensed Professional Geologist in the States of Wyoming (PG-3719) and Idaho (PGL-1414), and am a Registered Member in good standing of the Society of Mining, Metallurgy and Exploration (#4168244RM) with recognized special expertise in geology and mining. I am also a member of the American Institute of Professional Geologists (MEM-0174)
4. I have worked as a geologist for a total of 14 years since graduation from university - as an employee of four separate engineering and geological consulting firms and the U.S.D.A. Forest Service.
5. I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
6. I am responsible for the preparation of the technical report titled "NI 43-101 Technical Report Feasibility Study for the Pan Gold Project, White Pine County, Nevada," effective date, November 15, 2011 (the "Technical Report"), with specific responsibility for Sections 2 through 6, and overall organization and preparation of the Technical Report.

[1] Lowham Walsh LLC is part of a group of companies, including Gustavson Associates, that are controlled by Ecology and Environment, Inc.

7. I have not had prior involvement with the properties that are the subject of the Technical Report.
8. I am independent of the issuer applying all of the tests in Section 1.5 of National Instrument 43-101.
9. As of the date of this certificate, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed and I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading.
10. I have read National Instrument 43-101 and Form 43-101, and the Technical Report has been prepared in compliance with that instrument and form.

Dated this 19th day of December, 2011.

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1 SUMMARY

1.1 Introduction

Gustavson Associates, LLC (Gustavson) was commissioned by Midway Gold Corp. to complete a Feasibility Study for the Pan Gold Project in White Pine County, Nevada, based on the Updated Mineral Resource Estimate dated September 1, 2011. The Feasibility Study is intended to provide a comprehensive technical and economic analysis of the selected development option for the mineral project. This study includes detailed assessments of realistically assumed mining, processing, metallurgical, economic, legal, environmental, social, and other relevant considerations which have successfully demonstrated the economic viability of the project. The purpose of this report is to document the results of the Feasibility Study in compliance with Canadian National Instrument 43-101 Standards of Disclosure for Mineral Projects.

The Pan gold deposit is a sediment-hosted, bulk tonnage Carlin-type gold deposit along the prolific Battle Mountain-Eureka gold trend in east-central Nevada. Midway Gold US Inc. (hereafter referred to as MIDWAY) has drilled, sampled, and mapped the Pan deposit since acquiring the project in 2007. MIDWAY completed 61,875 ft of drilling in 162 holes in 2007 and 2008, and released an updated mineral resource estimate in December 2009. Gustavson performed an independent audit of the 2009 mineral resource estimate as part of a Preliminary Economic Assessment in 2010, and MIDWAY conducted a 14-hole (5774 ft) diamond core drilling program to obtain additional metallurgical and geotechnical data during the latter half of that same year. Gustavson completed a mineral reserve and mine plan as part of the March 2011 Preliminary Feasibility Study, which included an updated geologic model and mineral resource based on data obtained through February 28, 2011. MIDWAY has since completed an additional 33 holes totaling 27,795 ft.

1.2 Property Description and Ownership

The Pan Project is located in White Pine County, Nevada, approximately 22 miles southeast of Eureka and 50 miles west of Ely. The project area consists of 10,373 acres on 550 contiguous, unpatented federal mining claims controlled by MIDWAY. The property is located in the rolling hills of the Pancake Range in the Basin and Range physiographic province. Terrain is gentle to moderate throughout most of the project area, with no major stream drainages. Elevation of the property ranges from 6,400 to 7,500 ft above mean sea level.

At present, no infrastructure or power is in place at the Pan site. A relatively low voltage distribution line crosses the valley floor near a local ranch approximately 5 miles away. A higher voltage transmission line, 69 kV, with capacity suitable for mining and processing operations, is located approximately 14 miles from the project site and six miles north of US 50. Water to support exploration drilling is available from ranch wells approximately 3 miles to the west of the property. Logistical support is available in Eureka, Ely, and Elko, all of which currently

support large open pit mining operations. Mining personnel and resources for operations at Pan are expected to be available from Eureka, White Pine, and Elko Counties.

1.3 Geology and Mineralization

The geology of the Pan property is dominated by Devonian to Permian carbonate and clastic sedimentary rocks cut by the Pan fault, a steeply west dipping fault that trends north-south. The Pan fault juxtaposes gently west dipping sedimentary units on the west side of the fault with steeply northeast dipping sedimentary units on the east side. Post-mineral Tertiary volcanic rocks nonconformably overlie the faulted Devonian-Permian sedimentary units.

Gold mineralization at Pan occurs in a Carlin-style, epithermal, disseminated, sediment-hosted system. The distribution of the mineralization is controlled by structure, particularly with regard to the development of breccias, and by sedimentary bedding and alteration along unit contacts. Gold deposits within the project area generally occur as elongate bodies associated with structures and dissolution/hydrothermal breccia bodies hosted by the Pilot Shale and, to a lesser extent, the Devils Gate Limestone. Gold deposits also occur in a more tabular fashion within altered and mineralized sedimentary horizons.

1.4 Concept and Status of Exploration

MIDWAY's exploration program includes core and reverse circulation drilling, geologic mapping, geochemical sampling, and geophysical surveys at the Pan property. This comprehensive program has helped to define the geologic occurrence of gold mineralization and identify additional exploration targets on the Pan property. The level of exploration in individual target areas varies from rock and soil sampling with anomalous results to drill holes which reveal anomalous to ore-grade gold values, as determined during the February 2011 Preliminary Feasibility Study. Geochemical and geophysical targets merit additional work, primarily drilling, to test anomalous rock and soil geochemical results. Additional drilling is needed in portions of the deposit to expand and better understand existing drill intercepts.

1.5 Mineral Resource Estimate

Gustavson completed an updated mineral resource estimate for the Pan Project in November 2011. As part of that study, Gustavson created a model to estimate the mineral resources at Pan based on data provided by MIDWAY as of September 1, 2011. No new drilling occurred at North Pan and the February 2011 resource model was not modified during the current study. Gold mineralization in Central and South Pan was re-evaluated during the course of this resource update. Drill hole data including collar coordinates, MIDWAY surveys, sample assay intervals, and geologic logs were provided in a secure Microsoft Access database. Surficial geology maps and cross-sections detailing alteration and lithology were also provided in electronic format. The database has been updated to include the additional 33 reverse circulation drill holes completed by MIDWAY in 2011.

Gustavson modeled and estimated the mineral resource by constructing geologic, alteration, and mineral domains from the MIDWAY cross sections, and by geostatistically analyzing the drill data to define the parameters required to estimate gold grades in the 3-Dimensional (3D) block model. Leapfrog 3D® geological modeling software was used to create 3D stratigraphic, alteration, and mineral domain solids. MicroModel® software was used to estimate gold grades.

MIDWAY defined the structure, stratigraphy, and alteration of the North, Central, and South Pan zones on 1 inch = 50 ft cross-sections spaced 200 feet apart and oriented east to west. Gustavson combined the MIDWAY subsurface interpretations with surface geology to create 3D stratigraphic and alteration models.

A block model was created for the Pan Deposit using blocks that are 20 feet wide, 20 feet long, and 20 feet high. Each of the blocks was assigned attributes of gold grade, mineral resource classification, rock density, tonnage factor, lithology, alteration, and a grade classification. The blocks were then assigned to a domain as appropriate to assist in estimation.

1.5.1 North Pan

All of the domains were estimated in 3 passes and each block was assigned a classification of measured, indicated, or inferred. The resource classification of each block was based on a factor of the average sample distance in an anisotropic direction as established by the second structure range from the variogram model for the domain being estimated. The measured class utilized a ½ ellipsoid variogram search distance. Indicated was set at a full variogram search distance and inferred was set at 2 times the variogram distance. As an additional requirement, Gustavson limited the measured and indicated estimation data to include only the fire assay intervals. Inferred resource was estimated using all available assay data. Ordinary Kriging was used to estimate grade for all domains.

1.5.2 Central and South Pan

All of the domains were estimated by using large search ellipses oriented in the direction of maximum continuity to provide an estimation of the gold grade within every block inside of the grade shells. The resource classification of each block was based on a factor of the closest sample distance in an anisotropic direction as established by the second structure range from the variogram model for the domain being estimated. The measured class utilized a ½ ellipsoid variogram search distance. Indicated resource was set at a full variogram search distance and inferred resource was set at 2 times the variogram distance. Each domain was estimated using a minimum of 5 composites with no more than 4 composites from a single drill hole. A maximum of 12 composites was allowed to better represent the local variability. Ordinary Kriging was used to estimate grade for all domains.

The mineral resource estimate is summarized in Tables 1-1 through 1-4. This mineral resource estimate includes all drill data obtained as of September 1, 2011, and has been independently verified by Gustavson.

Table 1-1 North Pan Mineral Resource

North Pan Measured Resource			
Opt	**Tons**	**Au Opt**	**oz**
0.008	13,994,415	0.0168	234,844
0.006	15,592,007	0.0158	245,850
0.004	**18,597,319**	**0.0140**	**260,404**
North Pan Indicated Resource			
0.008	10,565,126	0.0146	154,540
0.006	12,702,959	0.0133	169,135
0.004	**17,006,845**	**0.0112**	**189,823**
North Pan Measured plus Indicated Resource			
0.008	24,559,541	0.0159	389,384
0.006	28,294,966	0.0147	414,985
0.004	**35,604,164**	**0.0126**	**450,228**
North Pan Inferred Resource			
0.008	122,858	0.0112	1,376
0.006	233,476	0.0091	2,129
0.004	511,402	0.0067	3,427

Table 1-2 Central Pan Mineral Resource

Central Pan Measured Resource			
Opt	**Tons**	**Au Opt**	**oz**
0.008	2,329,227	0.0146	33,991
0.006	2,837,448	0.0132	37,482
0.004	**3,802,537**	**0.0111**	**42,192**
Central Pan Indicated Resource			
0.008	1,895,266	0.0122	23,216
0.006	2,524,520	0.0109	27,623
0.004	**4,053,056**	**0.0086**	**34,885**
Central Pan Measured plus Indicated Resource			
0.008	4,224,493	0.0135	57,207
0.006	5,361,968	0.0121	65,105
0.004	**7,855,593**	**0.0098**	**77,077**
Central Pan Inferred Resource			
0.008	240,912	0.0103	2,470
0.006	290,465	0.0096	2,802
0.004	722,079	0.0066	4,741

Table 1-3 South Pan Mineral Resource

South Pan Measured Resource			
Opt	**Tons**	**Au Opt**	**oz**
0.008	13,826,998	0.0182	251,350
0.006	15,584,480	0.0169	263,423
0.004	**18,297,337**	**0.0151**	**276,641**
South Pan Indicated Resource			
0.008	17,440,794	0.0158	275,596
0.006	20,764,856	0.0144	298,599
0.004	**26,469,130**	**0.0123**	**325,863**
South Pan Measured plus Indicated Resource			
0.008	31,267,792	0.0169	526,946
0.006	36,349,336	0.0155	562,022
0.004	**44,766,467**	**0.0135**	**602,504**
South Pan Inferred Resource			
0.008	1,588,716	0.0184	29,274
0.006	1,933,540	0.0164	31,651
0.004	3,096,599	0.0120	37,093

Table 1-4 Total Pan Mineral Resource

Pan Total Measured Resource			
Opt	**Tons**	**Au Opt**	**oz**
0.008	30,150,640	0.0173	520,186
0.006	34,013,935	0.0161	546,756
0.004	**40,697,193**	**0.0142**	**579,238**
Pan Total Indicated Resource			
0.008	29,901,186	0.0152	453,351
0.006	35,992,335	0.0138	495,357
0.004	**47,529,031**	**0.0116**	**550,571**
Pan Total Measured plus Indicated Resource			
0.008	60,051,826	0.0162	973,537
0.006	70,006,270	0.0149	1,042,112
0.004	**88,226,224**	**0.0128**	**1,129,809**
Pan Total Inferred Resource			
0.008	1,952,486	0.0170	33,120
0.006	2,457,481	0.0149	36,581
0.004	4,330,080	0.0105	45,261

1.6 Mineral Reserve Estimate

The February 2011 Prefeasibility Study demonstrated that the Pan Project is economically viable, and this Feasibility Study has strengthened that conclusion. Based on the results of the Feasibility Study, Measured and Indicated Mineral Reserves within the designed pits are considered Proven and Probable Reserves as defined by the Canadian Institute of Mining, Metallurgy, and Petroleum. The final reserves are reported using a 0.008 Au opt cutoff for the North and Central pits, and a 0.006 Au opt cutoff for the South pit. Cutoffs were chosen to maximize the NPV of the project and do not necessarily represent the minimum economic cutoff. Pit designs are based on geologic criteria provided in the April 2011 Pit Slope Evaluation report produced by Golder Associates. Geologic solids created for each lithological unit were used as a guide during the pit design process. The limestone units were designed with a 50° inter-ramp wall angle assuming pre-split blasting in these units; all other lithological units were designed with a 45° inter-ramp wall angle.

1.6.1 Whittle Optimization

Gustavson generated a series of optimization shells on the South and North resource blocks, ranging from $236/oz to $2360/oz. Forty six shells were generated separately for the North and South resource areas. Heap leach recoveries of 65% and 85%, for North and South Pan, respectively, were used in the optimization runs. The general parameters were based on preliminary estimates of operating cost, and incorporated recommendations from the April 2011 Pit Slope Evaluation report. Mining costs were estimated to be $1.09/ton of material moved for the pit optimization. Crushing, agglomeration, leaching, general and administration, and gold recovery costs were estimated at $3.71/ton of ore. Only Measured and Indicated Resources were considered in the evaluation; Inferred resources were treated as waste.

1.6.2 Calculation Parameters

The series of pit optimizations were graphed and evaluated to compare cash flows, net present values (NPV's) and internal rates of return (IRR's). The final South pit and the North pit optimizations are based on shells at a cost less than the three year trailing average price of $1200/oz in order to achieve a higher NPV and overall lower cash cost per ounce. The option of mining the entire South Pan pit before the North Pan pit was evaluated during the scheduling process. Although the South Pan pit has a 20% higher recovery factor, mining the South Pan in phases results in a higher IRR by delaying the high strip of the Phase 2 South Pit until the end of the mine life. The option of mining the North pit first was also evaluated, but the higher recovery from the South Pan pit (85%, compared to 65% from North Pan) and shorter estimated leach times render the South pit the more favorable option to mine first.

1.6.3 Cutoff Grade Equations

The mineral reserve estimate for the Pan Project is based on designed open pits with maximized revenues at a gold price of $1180 per ounce. Cutoff grades of 0.006 Au opt (0.21 gpt) in the South pit and 0.008 Au opt (0.27 gpt) in the North & Central pits provide the highest NPV for the project.

1.6.4 Mineral Reserve Estimate

Using the NI 43-101 Updated Mineral Resource Estimate filed in November 2011, Proven and Probable Reserves of 53,254,000 tons at a grade of 0.016 opt are contained in the mineral resource at Pan. A total of 864,000 oz of gold are contained in the Pan Project mineral reserves. Estimated mineral reserves for the Pan Project are presented in Table 1-5.

Table 1-5 Pan Project Mineral Reserves Estimate

North and Central Pan Cutoff Grade: 0.008 opt / 0.274 g/tonnes	Tons	Gold	
	(x 1000)	opt	ounces (x 1000)
North Pan			
Proven Reserves	12,625	0.018	223.30
Probable Reserves	10,993	0.015	162.66
Proven & Probable Reserves	23,618	0.016	385.95
Inferred within Designed Pit	351	0.012	4.29
Waste within Designed Pit	27,823		
Total tons within Designed Pit	51,791		
Central Pan			
Proven Reserves	1,799	0.015	27.78
Probable Reserves	1,125	0.013	15.00
Proven & Probable Reserves	2,924	0.015	42.78
Inferred within Designed Pit	75	0.010	0.77
Waste within Designed Pit	5,387		
Total tons within Designed Pit	8,386		
Sub Total - North + Central			
Proven Reserves	14,423	0.017	251.08
Probable Reserves	12,119	0.015	177.66
Proven & Probable Reserves	26,542	0.016	428.74
Inferred within Designed Pit	426	0.012	5.06
Waste within Designed Pit	33,210		
Total tons within Designed Pit	60,177		

Table 1-5 cont.

South Pan - Phases 1 and 2 Cutoff Grade: 0.006 opt / 0.206 g/tonnes	Tons	Gold	
	(x 1000)	opt	ounces (x 1000)
South Pan - Phase 1			
Proven Reserves	11,856	0.018	215.44
Probable Reserves	7,593	0.016	119.26
Proven & Probable Reserves	19,449	0.017	334.70
Inferred within Designed Pit	56	0.010	0.55
Waste within Designed Pit	31,887		
Total tons within Designed Pit	51,392		
South Pan - Phase 2			
Proven Reserves	1,548	0.014	21.01
Probable Reserves	5,716	0.014	79.80
Proven & Probable Reserves	7,263	0.014	100.81
Inferred within Designed Pit	212	0.016	3.39
Waste within Designed Pit	29,485		
Total tons within Designed Pit	36,961		
Sub Total - Phase 1 + 2			
Proven Reserves	13,404	0.018	236.46
Probable Reserves	13,308	0.015	199.05
Proven & Probable Reserves	26,713	0.016	435.51
Inferred within Designed Pit	269	0.015	3.94
Waste within Designed Pit	61,372		
Total tons within Designed Pit	88,353		

Total Reserves	Tons	Gold	
	(x 1000)	opt	ounces (x 1000)
Proven Reserves	27,827	0.018	487.51
Probable Reserves	25,427	0.015	376.71
Proven & Probable Reserves	53,254	0.016	864.22
Inferred within Designed Pit	695	0.013	9.0
Waste within Designed Pit	94,582		
Total tons within Designed Pit	148,531		

1.7 Conclusions and Recommendations

As a result of the work done as part of and resulting from this Feasibility Study, Gustavson concludes:

- The Pan deposit now contains over 1.1 million ounces of gold in Measured and Indicated Mineral Resource categories using a 0.004 opt cutoff.
- There continues to be good potential for the discovery of additional Mineral Resources at Pan.
- There is a proven and probable Mineral Reserve of 53,254,000 tons, containing 864,000 ounces of gold.
- The Pan project is an economic mining project generating approximately $122 million net present value, and an internal rate of return of 32.4% at a gold price of $1200.

Based on the results of this Feasibility Study, Gustavson recommends:

- Continuation of drilling to fill-in areas that are promising development areas, specifically between the North and South pits. MIDWAY is planning on $ 1.5 million in drilling for the next two years.
- Finalization of engineering for infrastructure, buildings, mining, and site facilities. This is currently estimated at $0.86 million (included in capital costs in the Feasibility Study)
- Support for the EIS and permitting, estimated to be $ 0.4 million over the next 2 years.
- Construction of the access road which is estimated at $ 1.7 million.
- Drilling and testing of a water well, estimated at $0.1 million.
- Purchase of long-lead equipment estimated at approximately $ 2.0 million.

2 INTRODUCTION

2.1 Purpose

Gustavson Associates, LLC (Gustavson) was commissioned by Midway Gold Corp. to conduct a Feasibility Study for the Pan Project in White Pine County, Nevada. The purpose of this report is to document the results of the Feasibility Study according to Canadian National Instrument 43-101 Standards of Disclosure for Mineral Projects and guidelines for technical reporting. This study includes detailed assessments of realistically assumed mining, processing, metallurgical, economic, legal, environmental, social, and other relevant considerations needed to demonstrate the economic viability of the project. All data and interpretations are based on information available prior to the effective date of this report, November 15, 2011.

2.2 Qualified Persons

The qualified persons responsible for this report are:

- William J. Crowl, R.G., Vice President, Mining Sector, Gustavson Associates
- Donald E. Hulse, PE, Principal Mining Engineer, Gustavson Associates
- Terre A. Lane, Member MMSA QP Reserves and Mining, Associate Principal Mining Engineer, Gustavson Associates
- Donald J. Baker, PhD, QP Geology and Reserves, Member MMSA, Associate Principal Geologist, Gustavson Associates
- Jennifer J. Brown, P.G., Registered Member SME, Principal Geologist, Lowham Walsh LLC

Terre Lane acted as project manager during preparation of this report, and is specifically responsible for Sections 1, 9 through 13, and 16 through 18. Dr. Donald Baker is responsible for Sections 7 and 8. Donald Hulse is responsible for Sections 14, 15, and 19 through 27. Ms. Brown is responsible for Sections 2 through 6, and Mr. William Crowl has reviewed the entire document.

2.3 Site Visit of Qualified Person

Terre Lane visited the Pan site on May 27, 2010, and the Ely office on October 7 and 8, 2010. While on site, Ms. Lane reviewed drill cuttings, drill logs, and assay certificates, and compared selected assay certificates to data included in the project database. At the Ely office, Ms. Lane inspected core samples and reviewed core logging and splitting procedures, data handling and sample security protocols, and chain of custody. During a site visit on February 21 and 22, 2011, Dr. Donald Baker reviewed the local geology and organization of project data, verified drill locations, and evaluated sampling methods and security protocols.

2.4 Sources of Information

Gustavson sourced information from referenced documents as cited in the text and summarized in Section 27 of this report. Gustavson and others have previously filed the following technical reports on the Pan Project:

M. Gustin (2005). *Pan Gold Project, Updated Technical Report, White Pine County, Nevada USA*, prepared by Mine Development Associates Mine Engineering Services, issued by Castleworth Ventures Inc.

D. Harris (2009). *Pan Project, White Pine County, Nevada NI 43-101 Technical Report*, prepared by MGC Resources, filed by Midway Gold Corp.

Gustavson Associates, LLC (2010). *NI 43-101 Preliminary Economic Assessment of the Pan Gold Project, White Pine County, Nevada,* issued by Midway Gold Corp.

Gustavson Associates, LLC (2011). *NI 43-101 Preliminary Feasibility Study of the Pan Gold Project, White Pine County, Nevada,* issued by Midway Gold Corp.

Gustavson Associates, LLC (2011). *NI 43-101 Updated Mineral Resource Estimate for the Pan Gold Project, White Pine County, Nevada,* issued by Midway Gold Corp.

A portion of the background information and technical data for this report was obtained from the above reports. Additional information was requested from and provided by Midway Gold U.S. Inc. (MIDWAY).

2.5 Units of Measure

Unless stated otherwise, all measurements reported here are in US Commercial Imperial units, and currencies are expressed in constant 2011 US dollars. The mineral resource estimates cited in this report are classified in accordance with Canadian Institute of Mining, Metallurgy, and Petroleum (CIM) Definition Standards for Mineral Resources and Mineral Reserves.

3 RELIANCE ON OTHER EXPERTS

The conclusions and recommendations included in this report rely in part on work performed and information provided by MIDWAY personnel. Much of the data and some of the geologic interpretations and conclusions presented here were first presented in the previously issued technical reports identified in Section 2.4. Additional information was provided by internal reports generated by MIDWAY geologists. This study also relies on information provided by Mr. R.J. Smith, a Registered Landman with MIDWAY, regarding land agreements, options, claims of accuracy of title, royalty information, and environmental liabilities.

4 PROPERTY DESCRIPTION AND LOCATION

4.1 Location

The Pan property is situated in the northern portion of the Pancake Range in White Pine County, Nevada, 22 miles southeast of the town of Eureka and 50 miles west of Ely (Figure 4-1). The project area encompasses approximately 10,373 acres (4,198 ha), all located within surveyed townships (Figure 4-2). The geographic center of the property is located at 39°17'N latitude and 115°44'W longitude, and the primary zones of mineralization on the property are located in Sections 25 and 36, Township 17 North, Range 55 East (T17N, R55E) and Section 1, T16N, R55E, Mount Diablo Base and Meridian (MDBM). Access to the Pan site is provided by an unmaintained dirt road that originates at US 50 and traverses the width of the property.

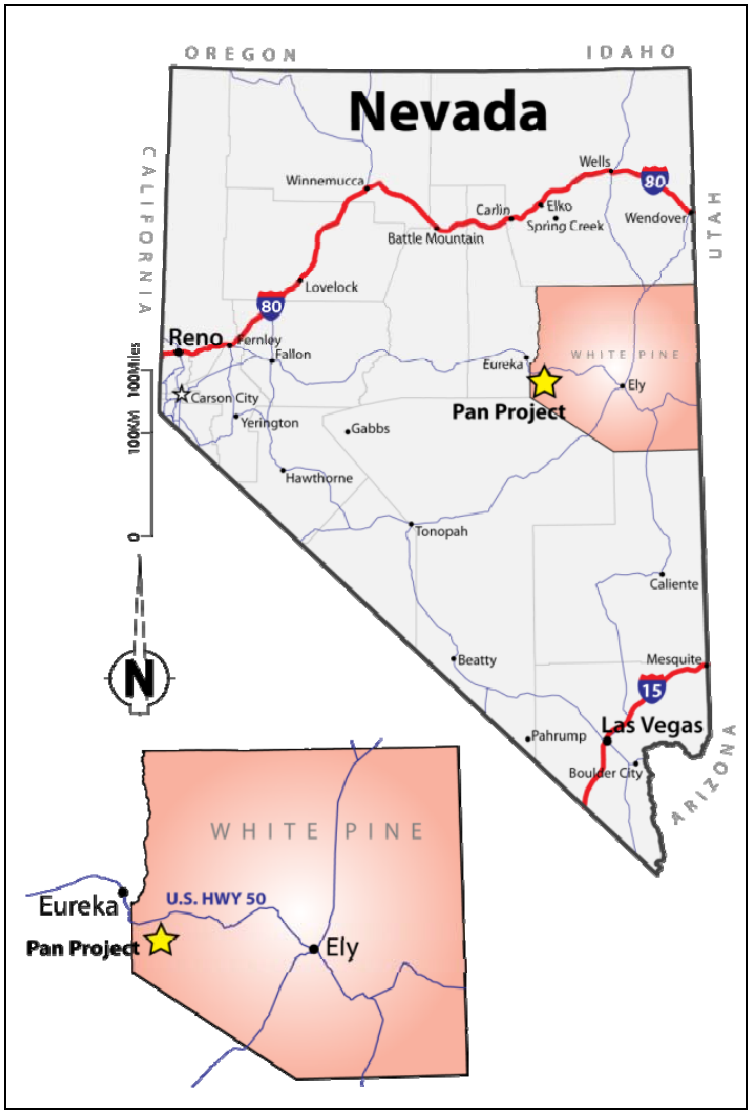


Figure 4-1 Property Location

4.2 Mineral Tenure, Agreements, and Exploration Permits

4.2.1 Mineral Rights

The Pan Project consists of 550 contiguous, active, unpatented lode mining claims covering portions of Sections 12 through 15, 22 through 27, and 34 through 36, T17N, R55E; portions of Sections 19, 29, and 30, T17N, R56E; portions of Sections 1 through 3, 10 through 15, 22, and 23, T16N, R56E; and portions of Sections 6 and 7, T16N, R56E, as shown on Figure 4-2.

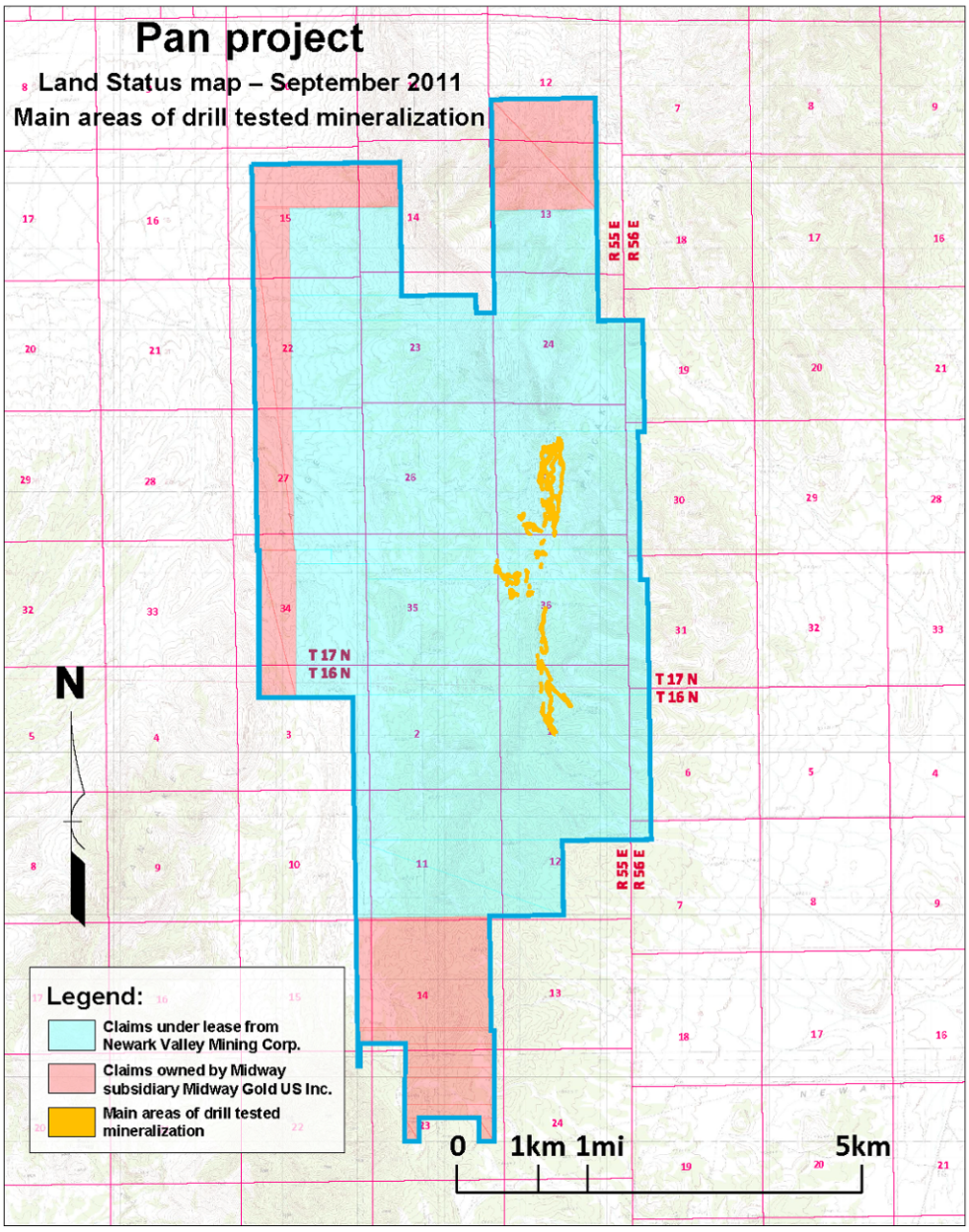


Figure 4-2 Claim Boundary

The unpatented lode claims were individually surveyed at time of location. Claim maps filed with the BLM and White Pine County are kept active through payment of an annual maintenance fee due each August 31. A complete listing of the claims on file with the BLM and White Pine County is available upon request.

4.2.1.1 Newark Valley Mining Agreement

Pursuant to acquisition of the Pan Nevada Gold Corporation (PNV) effective April 16, 2007, Midway Gold Corp. acquired a 100% interest in the January 7, 2003 mineral lease agreement by and between Pan Nevada Gold Corporation (formerly Castleworth Ventures, Inc.) and Newark Valley Mining Corp. (NVMC), derivative successor in interest to the Lyle F. Campbell Trust (LFC Trust). On or before January 5 of each year, PNV must pay an advance minimum royalty of the greater of US$60,000 or the US dollar equivalent of 174 ounces of gold valued by the average of the London afternoon fixing for the third calendar quarter preceding January 1 of the year in which the payment is due. All minimum advance royalties will be creditable against a sliding scale gross production royalty of between 2.5% and 4% (Table 4-1).

If the total amount of gross production royalty due NVMC in any calendar year exceeds the advance minimum royalty due within that year, PNV can credit all un-credited advance minimum royalties paid in previous years against 50% of the gross production royalty due NVMC within that calendar year. Ten claims are also subject to an overriding 1% Net Smelter Royalty (NSR) royalty payable to a third party.

PNV must incur a minimum of US$65,000 per year work expenditures, including claim maintenance fees, during the term of the mining lease.

Table 4-1 Pan Royalty Schedule

Price of Gold	Percentage
To and including $340.00/oz	2.5%
From $340.00/oz to $450.00/oz	3.0%
$450.00/oz and greater	4.0%

(Source: MIDWAY)

The original lease encompassed 98 claims and established a 1-mile area of interest within which all new claims located by PNV or an affiliate are subject to the lease agreement. As noted, 10 PA claims are subject to the 1% NSR overriding royalty. PNV (or its predecessors) expanded the claim holdings within the area of interest to a total of 410 unpatented claims.

4.2.1.2 Additional Claims

Over the years, MIDWAY, a wholly owned subsidiary of Midway Gold Corp., has staked 111 additional unpatented claims (56 NC, 53 GWEN, and 2 REE claim blocks), within and adjacent to the Pan property that are without royalty burden and are not subject to the NVMC area of interest.

4.3 Environmental Liabilities

The BLM prepared an Environmental Assessment (EA) for exploration activities on the Pan property in 2004. This evaluation, conducted as part of the Plan of Operations (POO) process to permit surface disturbance resulting from exploration activities, produced a Finding of No Significant Impact (FONSI). Although the BLM found no significant environmental impact during the EA, the associated scoping process identified air quality, soils, vegetation, wildlife (migratory birds), grazing, wild horses, cultural resources, visual resources, and hazardous/solid wastes as potential areas of concern.

An Exploration POO Amendment describing additional exploration activities was submitted to the BLM by MIDWAY in 2010, triggering the NEPA process. The POO Amendment includes an additional 75 acres of disturbance and construction of a new access road. Based on BLM scoping, issues of concern for additional exploration include cultural resources, migratory birds, sage grouse, wildlife, vegetation, paleontology, soils, recreation, and visual resources. The draft EA prepared to address these issues did not identify any significant impacts. The draft EA was made available for public comment in March 2011 and a FONSI was signed in July 2011.

Baseline studies to support a potential Mining POO have been initiated and are ongoing. To date, soils, vegetation, and wildlife baseline surveys have been completed. No threatened and endangered or special status species plants were found in the proposed areas of exploration or road construction. Sage grouse are a special status wildlife species present in the vicinity of the existing access road. A new road designed to avoid existing sage grouse leks has been permitted, and its location approved by the BLM and the Nevada Division of Wildlife (NDOW).

A Mining Plan of Operations (POO) was submitted to the Bureau of Land Management (BLM) in September, 2011, and was deemed to be administratively complete by the BLM.

The triggered Environmental Impact Statement (EIS) will likely need to address the following issues prior to project development:

- Potential impacts to local sensitive species: sage grouse, white sage, pygmy rabbits, and migratory birds and bats, which have potential to occur within the claim block.
- Potential impacts to segments of the Lincoln Highway/Hamilton Stage Road, Carbonari sites, and other historic/archaeological sites

- Geochemistry
  - Gold mineralization in the Pan deposit occurs as sub-microscopic particles disseminated in carbonate and clastic sedimentary rocks. All known mineralization is non-sulphur bearing oxide, and clay and silica alteration are the dominant styles of alteration. Acid rock drainage (ARD) is unlikely based on these conditions, but given the importance of the issue and according to current regulatory requirements, geochemical evaluations of waste materials will need to be completed.

The permitting schedule for the Pan Project will be dominated by the NEPA process requirements, which typically take at least one year for baseline studies and public review followed by comment periods for scoping and Draft EIS documents.

The schedule for other required permits will fall within the NEPA time frame and should not impact the overall permit schedule. Examples of other potentially required permits include the following:

- Nevada Division of Minerals – Mine Registration – requires an approved POO if on Federal land – not approved until after ROD
- Nevada Department of Environmental Protection – Reclamation Permit Application – Requirements are the same as the POO if on Federal Lands.
- Nevada Bureau of Water Pollution Control – Application for Permit to Discharge Process Wastewater
- Nevada Bureau of Water Pollution Control – Groundwater Discharge Permit, if necessary
- Nevada Bureau of Air Pollution Control – Permit to Construct and Operate

4.4 Exploration Permits and Jurisdictions

MIDWAY exploration activities are permitted under the POO approved by BLM in 2004 and the POO Amendment approved by BLM in 2011. MIDWAY was originally bonded through Pan Nevada at $63,170, which allowed for surface disturbance as a result of exploratory drilling on about 22 acres within the POO boundary. The POO Amendment added approximately 75 acres of new disturbance for access roads and drill pads, and increased the bond amount to a total of $362,696. Approximately 12 acres of ground surface are currently disturbed due to recent exploration activities, and the disturbance and bonding level are updated annually and every three years, respectively, as required by BLM. There are no known historic hard rock or placer mining disturbances on the property.

Portions of the Pan Project were disturbed during previous exploration activity and only some of those areas have been reclaimed. According to the BLM and SRK (2009), MIDWAY's responsibility is limited to those disturbed areas that are currently used for exploration activities.

MIDWAY is currently responsible for monitoring and reclamation of active drill roads and drill sites totaling approximately 100 acres.

5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE, AND PHYSIOGRAPHY

5.1 Accessibility, Infrastructure, and Local Resources

Access to the Pan property is provided by an unmaintained dirt road that intersects US Highway 50 approximately 17 miles southeast of Eureka, Nevada. It is approximately 7 miles by road from US 50 to the Pan Project site. The property is accessible year-round, but weather conditions occasionally make access and on-site travel difficult during the winter months.

The Pan Project is wholly located on and operations will be contained within MIDWAY land holdings. Electrical power is available via a power line, which runs adjacent to US 50, approximately 6 miles north of the highway and 14 miles from the project site. Water to support exploration drilling is available from ranch wells located approximately 3 miles to the west of the property. Water rights have been secured to provide for year-round water from the Newark Valley, just west of the mine site, for a term of 25 years.

The town nearest to the project site, Eureka, Nevada, hosts a population of 610 according to 2010 US Census data. Greater Eureka County and White Pine County host area populations of 1,987 and 10,030 respectively, though population is centered primarily in Eureka and Ely, Nevada. Elko, Nevada, population of 18,400, is the nearest city to the project site, and is located approximately 110 miles to the north by road.

Logistical support is available in Eureka, Ely, and Elko, all of which currently support large open pit mining operations. Barrick Gold Corporation currently operates the Ruby Hill Mine near Eureka and the Bald Mountain Mine approximately 50 miles to the north. Quadra Mining operates the Ruth Copper pit near Ely, and large-scale mining by Barrick and Newmont Mining Corporation is ongoing near Elko and Carlin, Nevada to the north. Mining personnel and resources for operations at Pan are expected to be available from Eureka, White Pine, and Elko Counties.

5.2 Topography, Elevation, Vegetation, and Climate

The Pan property is located within the rolling hills of the northern most portion of the Pancake Range. The terrain is gentle to moderate throughout most of the project area, with no major stream drainages. Elevation ranges from 6,400 to 7,500 ft above mean sea level. Local vegetation includes Piñon-Juniper woodlands broken by open areas of sagebrush and grass. No springs are known to exist on the property.

The local climate is typical for the high desert of east-central Nevada and the Basin and Range province. Climate data shows average annual precipitation of 11.85 inches, average temperatures ranging from 17°F in the winter to 86° F in the summer. Daytime temperatures in Eureka

commonly exceed 90°F during the months of July and August (Western Regional Climate Center, 2008).

6 HISTORY

6.1 Exploration History

Mr. Lyle Campbell discovered the Pan deposit while prospecting in 1978, when he encountered gold-bearing jasperoid, now referred to as Campbell Jasperoid. Mr. Campbell staked 147 original unpatented mining claims, and transferred ownership of the claims to the LFC Trust in 1986. The LFC Trust was bought out in 2008 and is now owned by NVMC.

Several companies have conducted exploration on the property since 1978. The following paragraphs summarize exploration activities at Pan based on information provided in previously issued technical reports:

- Mr. Campbell leased his claims to Amselco in 1978. The majority of drilling exploration carried out by Amselco took place in North Pan.
- In 1986, Hecla conducted a drilling exploration program in the central portion of the Pan property.
- Echo Bay leased the claims in 1987 and completed an exploration drilling program that resulted in the discovery of gold mineralization at South Pan.
- The Pan property was explored under a joint venture between Alta Gold and Echo Bay from 1988 through 1991. Drilling was conducted in both North and South Pan, in conjunction with geologic mapping, geochemical sampling, and an induced polarization geophysical survey. The Alta Bay joint venture initiated studies in support of mining development, including an archaeological survey, additional metallurgical test work, and preliminary mineral reserve calculations and mine designs.
- Alta Gold retained ownership of the Pan Project after dissolution of the joint venture until 1992. Drilling exploration was reported, but the associated holes have not been validated and are not included in the modern day resource database.
- In 1993, Southwestern Gold Corporation completed drilling exploration on a small section of claims that they held at that time west of North Pan. The associated drill hole collars have been identified in the field, but no other information has been validated and these holes are not included in the modern resource database.
- The Pan Project was dormant from 1993 until 1999, when Latitude leased the property from LFC Trust. Between 1999 and 2001, Latitude explored the property as part of a joint venture with Degerstrom. Geologic mapping and outcrop and soil sampling were completed under the joint venture, as was drilling and metallurgical testing.
- Latitude drilling focused primarily on North and South Pan mineralization, but also resulted in the discovery of mineralization in the modern day Syncline and Black

Stallion target areas of Central Pan. Latitude terminated the joint venture with Degerstrom in mid-2001, and joint ventured the project to Metallica later that year. From LFC Trust files, it appears that Metallica focused on thermal imagery and lineament study of satellite data over the Pan area. No additional subsurface exploration work was completed. The LFC Trust terminated the lease agreement with Latitude in 2002, citing Latitude's inability to meet financial obligations.

- Castleworth Ventures. Inc. leased the Pan claims in January 2003. The company completed drilling exploration and conducted geologic mapping, sampling, metallurgical test work, and resource estimation. On April 16, 2007, Pan Nevada Gold Corporation (formerly Castleworth Ventures, Inc.) was acquired by MIDWAY.
- Since acquiring the Pan Project in 2007, MIDWAY has completed 209 holes, of which 195 were reverse circulation and 14 diamond core drill holes for a total of 95,394 ft. Drilling efforts have generally focused on expanding known mineralization, but also include confirmation drilling and exploration drilling in several potential target areas on the Pan property. In addition to drilling exploration, MIDWAY has completed geologic mapping, soil and outcrop sampling, and gravity survey.

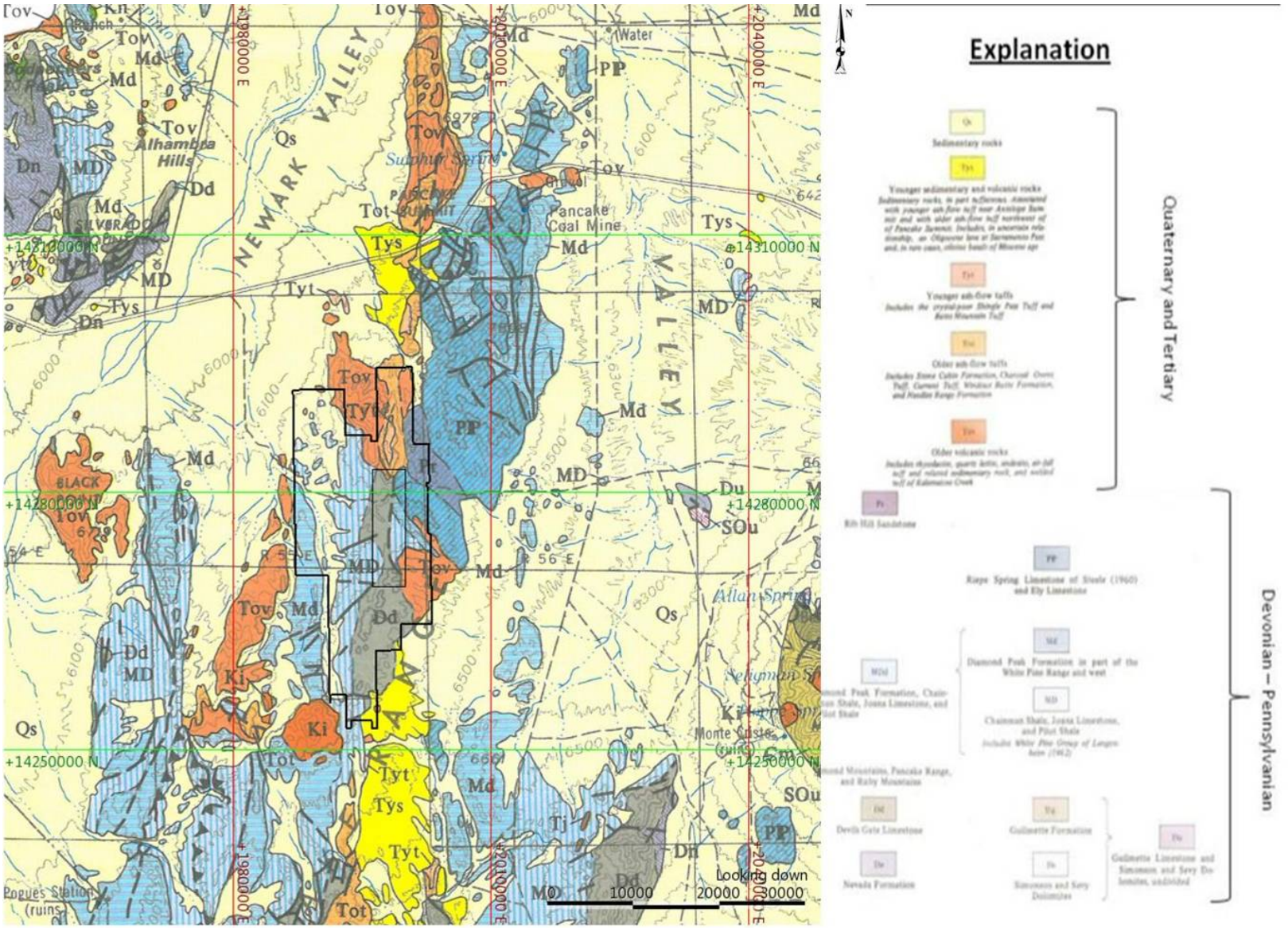
6.2 Historical Resource and Reserve Estimates

Historical resource and reserve estimates are described in detail in the 2005 report produced by Mine Development Associates (MDA). These resource and reserve estimates have not been verified, are not considered reliable, are not relevant to the updated mineral resource presented in this report, and are mentioned here for historical completeness only.

7 GEOLOGICAL SETTING AND MINERALIZATION

7.1 Regional Geology

The Pan property is located in the core of the northern portion of the Pancake Range of east-central Nevada. The Pancake Range is part of the Basin and Range Province, a large physiographic region characterized by a series of normal faults expressed as a sequence of north-south trending narrow mountain ranges separated by flat, arid valleys. The Pancake Range is approximately 85 miles long and 8 to 10 miles wide and is composed of Paleozoic carbonate and clastic sedimentary rocks, Cretaceous igneous intrusives, and Tertiary volcanics. A regional geologic map of the northern Pancake Range is presented as Figure 7-1.



(Smith, 1976)

Figure 7-1 Regional Geology, Pancake RangeLocal Geology

The Pan property is bounded to the east and west by the Newark Valley. Devonian, Carboniferous, and Permian carbonate and clastic sedimentary rocks form the core of the Pancake Range, and are exposed in bedrock outcrop in the project area. A representative stratigraphic section is presented as Figure 7-2.

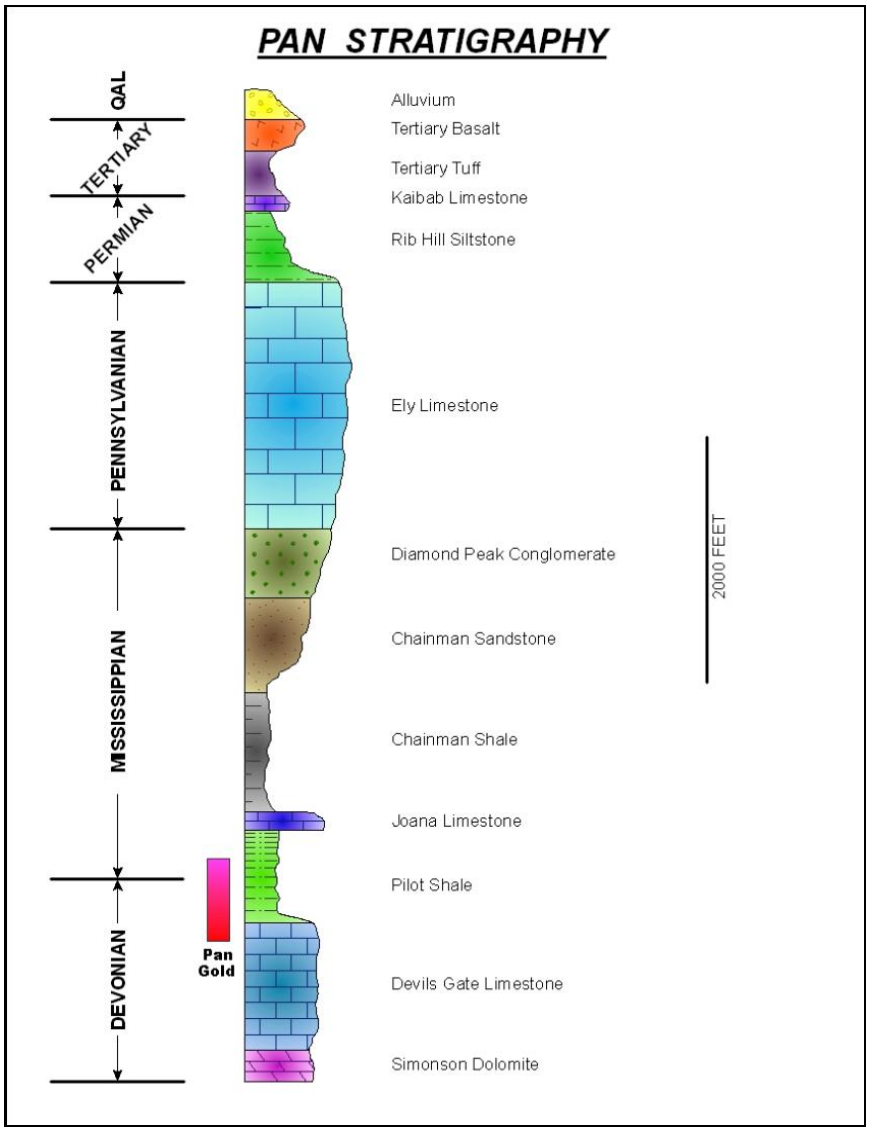


Figure 7-2 Pan Stratigraphy

A Cretaceous intrusion of quartz monzonite is present just south of the Pan Project area and a quartz monzonite sill intrudes along an east-west fault in the south central portion of the property. These intrusives are assumed to be age related to the Seligman and Monte Cristo stocks, which outcrop in the Mount Hamilton area to the east of the Pan property. The Seligman and Monte Cristo stocks may have provided a heat source for the Pan mineral deposits. Post-

mineral Tertiary volcanic rocks, including basalt and quartz latite airfall tuff, nonconformably cap the Devonian to Permian sedimentary bedrock geology in the vicinity of the Pan Project.

7.2 Property Geology

The geology of the Pan property is dominated by Devonian to Permian carbonate and clastic sedimentary rocks cut by the Pan fault, a steeply west dipping normal fault that trends north-south. The Pan fault juxtaposes gently west dipping sedimentary units on the west side of the fault, and steeply northeast dipping sedimentary units on the east side. Post-mineral Tertiary volcanic rocks nonconformably overlie the faulted Devonian through Permian sedimentary units. Individual lithologic units identified at the project site are described below, from oldest to youngest.

7.2.1 Lithological Units

7.2.1.1 Simonson Dolomite (Ds) - Devonian

The Simonson Dolomite is the lowermost lithologic unit intersected by drilling at the Pan property. This unit is not exposed on the surface. Thickness ranges from 500 to 1,300 ft thick in White Pine County (Smith, 1976) but only the top portion of the dolomite has been drilled at South Pan. The dolomite is a light gray, massively bedded unit.

7.2.1.2 Devils Gate Limestone (Dd) - Late Devonian

The oldest lithologic unit exposed in the northern Pancake Range is the Late Devonian Devil's Gate Limestone. This unit is massive to thinly bedded, medium to dark gray, fine to coarse grained limestone. Thickness of the unit ranges from about 1000 ft to 2500 ft locally. The Devil's Gate Limestone is the secondary host of gold mineralization at the Pan property.

7.2.1.3 Pilot Shale (MDp) - Late Devonian to Early Mississippian

The Pilot Shale has an upper series of thinly interbedded dolomitic and calcareous siltstone and silty shale, and a lower section of more thickly bedded calcareous siltstone with local limestone beds. The unit ranges in thickness from about 300 to 900 ft, but locally thickens structurally along the Pan fault. Silicified and argillized Pilot Shale is the primary host of gold mineralization at the Pan property.

7.2.1.4 Joana Limestone (Mj) - Mississippian

The Joana Limestone is a gray, medium grained, unevenly bedded limestone with abundant fossil fragments and detrital limestone interbeds. Reported fossil types include echinoderm, bryozoans, foraminifera, algae, and crinoids. Locally, light brown calcareous sandstone is present at the base of the unit. Thickness of the Joana Limestone is typically less than 150 ft at the Pan property, though the total thickness reportedly ranges from 90 to 500 ft throughout the county (Smith, 1976).

7.2.1.5 Chainman Shale (Mc) - Mississippian

The Chainman Shale consists of dark gray to black shale with thin interbeds of olive gray silty shale and siltstone. Thickness of the unit ranges from 1000 to 2000 ft (Smith, 1976) and is about 1000 ft at the Pan property.

7.2.1.6 Diamond Peak Formation (Md) - Mississippian

The Diamond Peak Formation consists of medium beds of coarse grained, quartz-rich sandstone and olive gray siltstone overlain by thick to massive conglomerate. Thickness of the Formation ranges from less than 1,000 to 3,700 ft, and is about 2400 ft in the Pan Project area.

7.2.1.7 Ely Limestone (Pe) - Pennsylvanian

The Ely Limestone is a medium bedded, coarsely crystalline, medium gray limestone with local interbeds of siltstone and chert. Thickness ranges from 1800 to 3000 ft, and averages about 2000 ft in the Pancake Range.

7.2.1.8 Rib Hill Siltstone - Permian

The Rib Hill Siltstone is a thinly bedded, quartz-rich, calcite-cemented siltstone with sandstone interbeds and high iron oxide and carbonate content. Thickness ranges from 800 to 1,400 ft (Smith, 1976). Thickness at the Pan property is unknown as a full section is not exposed, but based on limited drilling is greater than 600 ft.

7.2.1.9 Kaibab Limestone - Permian

The Kaibab Limestone is a thick-bedded limestone with reportedly high fossil content. This unit is found in isolated outcrops throughout White Pine County (Smith, 1976) at thicknesses ranging from 50 to 200 ft. True thickness at the Pan property is unknown as only two isolated outcrops of lower Kaibab are exposed.

7.2.1.10 Intrusives - Cretaceous

In the Mount Hamilton area to the east, both the Seligman and Monte Cristo stock have been age dated at 90.4 to 128.0 million years (Adair and Stringham, 1960). A small intrusive body south of the Pan property, the Pancake stock, was age dated at 108 million years (Smith, 1976). The Pancake stock ranges in composition from quartz monzonite to granodiorite. A quartz monzonite sill intrudes along an east-west fault in the south-central portion of the property.

7.2.1.11 Volcanic Units (Tv) - Tertiary

Tertiary volcanics exposed in the northern Pancake Range include a lower (Oligocene) quartz latite airfall tuff (50-200 ft thick) and an upper basalt flow (50-100 ft thick). Infrequent quartz-rich rhyodacite of similar age is present along the northern portion of the Pan property. These units are post mineral and overlie projections of gold mineralization and structure to the north and south of the known gold deposits at Pan.

7.2.2 Structural Geology

The geology of the Pan property is structurally dominated by the north-south trending Pan fault, a high angle fault with possible right lateral offset. Based on drill intercepts and interpretation, the fault dips between 80° to 85° west. On the west side of the fault, Devonian through Mississippian stratigraphy dips 10° to 30° westward. On the east side of the fault, Devonian through Permian stratigraphy dips 65° to 70° to the northeast.

The stratigraphic units on the east side of the Pan fault comprise the southwest limb of a northwest trending syncline. The Pan fault is recognizable in the field by the juxtaposition of younger sedimentary rocks to the east against older sedimentary rocks to the west, and can be tracked north until covered by Tertiary volcanic units. To the south, the Pan fault appears to horsetail with splays arcing to the southeast until covered by post-mineral volcanic units.

The terrain west of the Pan fault is cut by a number of northeasterly trending high angle faults with varying displacement senses. There are also a number of northerly trending faults, which may include high angle, dip-slip faults, and low angle, easterly-directed thrust faults. Thrust faulting reasonably accounts for the multiple repetitions of the Devils Gate Limestone and Pilot Shale, the principal hosts of mineralization.

Considerable breccia is present along and in proximity to the Pan fault and other structures to the west. The breccias host a substantial portion of the gold resource at the Pan Project and are interpreted as dissolution collapse breccia and hydrothermal breccia formed during the mineralizing event. Narrow breccia zones in the Devils Gate Limestone expand in lateral dimensions in the overlying Pilot Shale. The resultant geometry is one of elongate pods of breccia extending along structural trends within the Pilot Shale, with the breccia body necking down at depth in the Devils Gate Limestone. The breccia varies from clast to matrix supported, and contains angular to subrounded sedimentary fragments. Associated crackle breccia, wherein the rock is shattered but fragments remain roughly in place and not rotated, occurs marginal to or as relicts within the breccia bodies, and is altered and mineralized in a manner similar to the dissolution/hydrothermal breccia.

7.3 Mineralization

The Pan Project can be separated into three general geographic zones: North Pan, South Pan, and Central Pan. Gold mineralization at the Pan Project is encountered in all three zones.

Mineralization is both structurally and stratigraphically controlled, occurring primarily in breccias along the trend of the Pan fault, within high-angle northwest- and northeast-trending structural zones, and within calcareous shale beds. Collapse breccias in the upper Devil's Gate Limestone and pipe-like breccia bodies that developed within the Devil's Gate Limestone below the collapse breccia zones likely acted as conduits for gold-bearing hydrothermal solution.

In South Pan, mineralization occurs in breccias developed within both the Pilot Shale and the Devil's Gate Limestone, distributed within a broad zone of silicification and calcite veining associated with the Pan fault zone, and appears to be stratabound in limestone and shale along the limbs of an anticline dissected by the Pan fault. The contact between the Pilot Shale and Devil's Gate Limestone hosts mineralization along strike within both the Central and North Pan zones. These occurrences are described as Carlin-style, epithermal, disseminated, sediment-hosted systems.

Mineralization is primarily hosted in structurally controlled dissolution breccias along sub-vertical faults. Dissolution breccias formed along the Pan fault as well as minor cross faults in both North and South Pan. Wide zones of breccia developed in the Pilot Shale with narrower zones occurring in the Devils Gate Limestone.

Stratigraphically controlled mineralization occurs along argillized contacts between the Pilot Shale and Devils Gate Limestone. Better mineralization along these contacts tends to be hosted within the Pilot Shale. This style of mineralization is less common but is significant in the Wendy area of South Pan and in the Black Stallion and Syncline areas of Central Pan.

Estimation domains were delineated within the North Pan, South Pan, and Central Pan zones based on the style and orientation of mineralization in each area. Both styles of mineralization can be present within the same zone, though one is usually dominant. The search parameters within each domain were restricted to those most appropriate for the dominant style of mineralization.

7.3.1 Alteration

Alteration associated with the Pan deposits is typical of Carlin-style gold systems, and includes silicification, argillization, decalcification, and oxidation. Breccia bodies may be silicified (jasperoid) or argillized and can contain variably altered fragments, including silicified, clay altered, and/or decalcified fragments. The Pilot Shale- Devils Gate Limestone contact may be argillized and/or decalcified.

Silicification is characterized by multi-phase breccia and passive silica flooding along bedding and structures. Silicification occurs in breccia zones and in the Pilot Shale, and small zones have also been identified in the Devils Gate Limestone. Minor quartz veining has been reported in the North Pan zone, particularly in association with the Campbell Jasperoid.

Clay alteration is generally associated with hydrothermal alteration and carbonate destruction. Clay along faults and bedding is common in both the Pilot Shale and Devil's Gate Limestone, and is a common matrix of collapse breccias.

Decalcification of both the Devils Gate Limestone and calcareous siltstones of the Pilot Shale is spatially associated with mineralization encountered at Pan. Decalcification results in a sanded, punky texture, especially in lithologic units with high original carbonate content.

Mineralization at Pan occurs in strongly oxidized rock. Oxidation is prevalent throughout each of the zones with strong development of iron oxides (hematite and limonite). Liesegang banding formed in the Pilot Shale in association with oxidation. Sulphide minerals have rarely been described in drill logs at Pan, and are not associated with the gold mineralization.

The bulk of the mineralized area contains elevated barite levels, typically above 0.2%. Hydrothermal barite veins are present in the southeast portion of the property in association with the old Cue Ball Barite Mine, briefly worked in the 1970s.

7.3.2 Geometry of Mineralization

Gold deposits at the Pan Project generally occur as elongate pods in association with structures and dissolution/hydrothermal breccia bodies hosted by the Pilot Shale and, to a lesser extent, the Devils Gate Limestone. Gold deposits also occur as more tabular bodies in deposits hosted by altered and mineralized sedimentary horizons. Cross sections typical of the North and South Pan zones are shown on Figures 7-3 and 7-4.

North Pan mineralization is predominantly hosted in breccias developed in the moderately folded Pilot Shale along the Pan fault and other structures to the west. At present, very little mineralization has been identified in the Devils Gate Limestone, in part due to the lack of drilling which intersects the Pilot Shale-Devil's Gate contact. Mineralization occurs along a north-south trend approximately 5,000 ft long and 500 to 1,000 ft wide. Gold mineralization has been identified to depths up to 650 ft, but remains open at depth and to the north under volcanic cover.

The Central Pan zone contains mostly sub-horizontal, tabular mineralization hosted along the Pilot Shale- Devils Gate Limestone contact. Mineralization in the Black Stallion and Syncline areas is dominantly hosted in folded and faulted Pilot Shale, but also occurs in Devils Gate Limestone. This area of mineralization is relatively small, but there is some potential for expansion with additional drilling.

In the South Pan zone, mineralization has been identified along the north-south trend of the Pan fault for approximately 5,000 ft, ranging in width from 300 to 700 ft. To the east of the Pan fault, sedimentary units dip 30° to 70° to the northeast, with pronounced fault drag against major structures. Gold occurs in breccias composed of shattered and clay altered, decalcified Devils

Gate Limestone. Rock types are typically decalcified limestone and, where present, silicified and argillized Pilot Shale. A significant portion of the Pilot Shale at South Pan is eroded away. Mineralization in the Barite area is structurally dominated and mineralization occurs along the Pan fault in breccias of both the Pilot Shale and Devil's Gate Limestone. Mineralization in the Wendy area is stratigraphically dominated, more tabular in shape, and is controlled by alteration of the Pilot Shale- Devils Gate Limestone contact. Known mineralization in this zone is open to the east and to the south under volcanic cover.

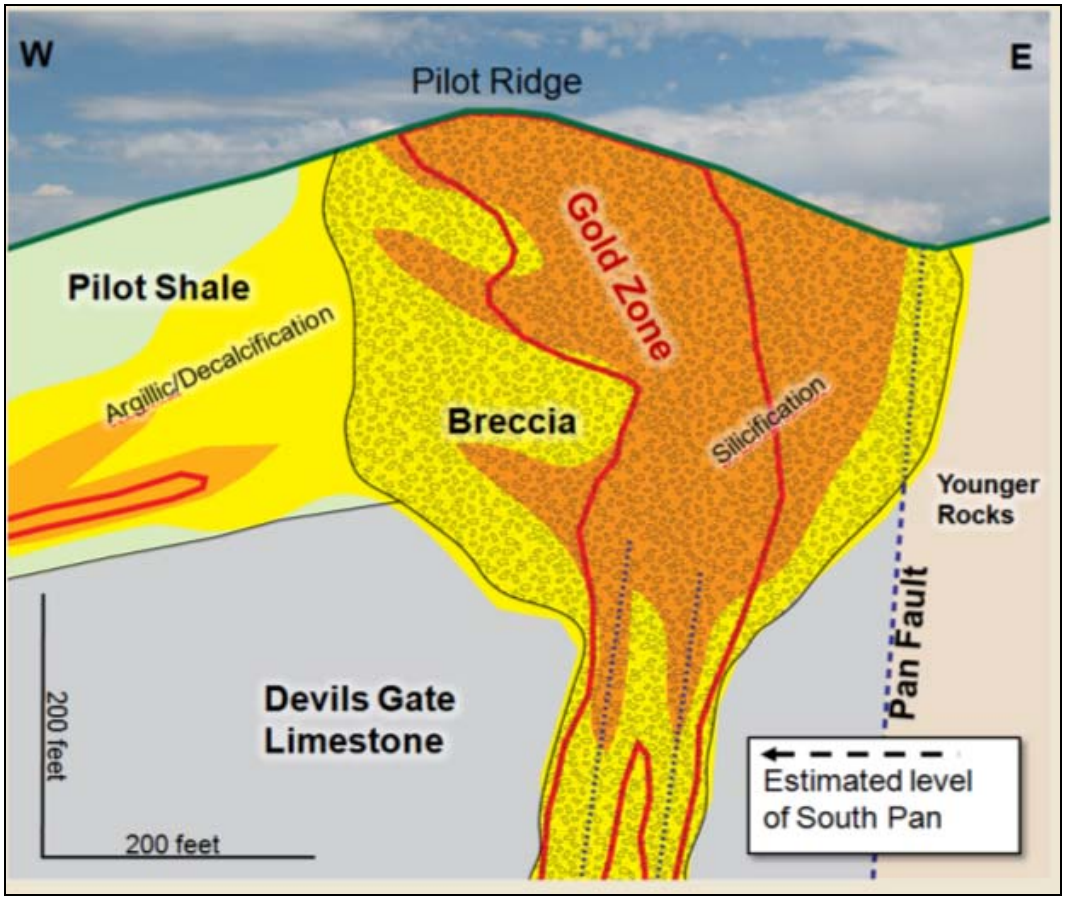


Figure 7-3 East-West Section across North Pan, Looking North

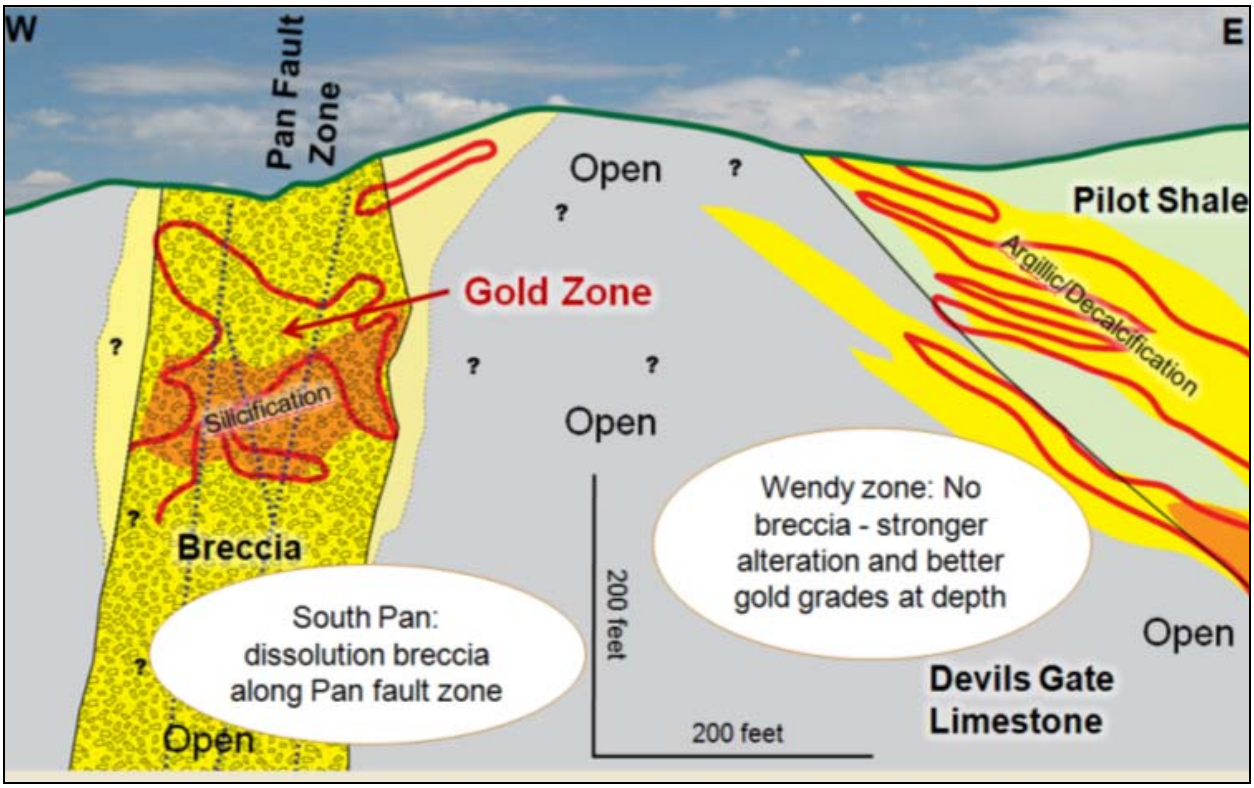


Figure 7-4 East-West Section across South Pan, Looking North

8 DEPOSIT TYPES

MIDWAY interprets gold deposits at the Pan Project to be Carlin-style, epithermal, disseminated gold hosted in Devonian and Mississippian sedimentary units. This type of system falls under the general classification of low sulfidation epithermal deposits. Gold particles occur as micron to submicron size disseminations. Visible or coarse gold is not common in this type of deposit, and has not been observed at Pan.

Controls on mineralization in Carlin-style systems and at the Pan Project include both structure and stratigraphy. Gold mineralization is generally distributed along high-angle faults, and in a more tabular fashion subparallel to stratigraphy. Dissolution breccias developed in association with faults at the Pan Project serve as the primary host for gold mineralization. Additional mineralization is hosted in favorable stratigraphy, primarily in the lower Pilot Shale and to a lesser extent, the upper Devil's Gate Limestone.

Similar type gold deposits in the surrounding area include Bald Mountain, Maverick Springs, Emigrant Springs, and Midway Gold Corp.'s Gold Rock deposit.

9 EXPLORATION

Exploration at the Pan Project is a comprehensive effort utilizing a variety of methodologies, including:

- Geochemical sampling
- Geophysics
- Surface and subsurface geologic mapping
- Drilling within the known resource area
- Drilling on exploration targets

9.1 Previous Operators Exploration Work

Previous exploration work includes geologic mapping, metallurgy, geochemical sampling, geophysical surveys, and drilling. Exploration conducted by previous operators is described in detail in previously filed technical reports, including Gustavson's 2011 Preliminary Feasibility Study.

9.2 MIDWAY Exploration Work

Since acquiring the Pan property in 2007, MIDWAY has conducted exploration using a number of different investigative techniques. Drill targets proximal to North and South Pan and additional exploration targets throughout the project area have been identified based on the results of surface geochemical surveys, chip sample analysis, geologic mapping, and geophysical surveys.

9.2.1 Surface Geochemistry

Soil sampling on 100 x 200 and 200 x 200 ft grids was carried out by Pan Nevada (2006) and MIDWAY (2007 and 2008). This grid covered the majority of the property and consisted of collection and analysis of 9,525 soil samples. Soils were sieved to the -10+80 mesh size fraction and assayed for gold at ALS Chemex. Assay for gold was accomplished by standard fire assay methods on a 30g subsample, and for an additional 50 elements by aqua regia digestion of a 0.5-gram subsample and inductively coupled plasma (ICP) finish.

9.2.2 Rock Samples

Between 2003 and 2008, MIDWAY and Pan Nevada collected and analyzed a total of 786 surface rock samples. Individual chip samples were collected from outcrops scattered throughout the property, and 10 ft continuous chip samples were collected from Pilot Ridge in the south central portion of North Pan. Samples were collected during geologic reconnaissance traverses, prospect mapping, and target delineation. Rock chips were crushed to 70% passing 2mm with a nominal 250 gram split, pulverized to 85% passing 75µm, and were then assayed by standard fire

assay methods by ALS Chemex. Only a small number of samples were analyzed for an additional 50 elements by aqua regia digestion of a 0.5-gram subsample and ICP finish.

9.2.3 Geologic Mapping

Latitude produced a geologic map of the Pan property at a scale of 1:6000 in 2001, focusing on North and South Pan. MIDWAY completed reconnaissance mapping, scale 1:12000 and more detailed local mapping, scale 1:6000, in 2007 in order to extend map coverage over the entire Pan Project area. This work helped to clarify the geologic setting, identify structural trends, and indicate prospective areas for additional exploration.

9.2.4 Geophysical Surveys

MaGee Geophysical Services conducted a ground gravity survey at the Pan property in 2008. J.L. Wright Geophysics of Spring Creek, Nevada, interpreted the results of the survey, which identified several major structural features and were used to identify target areas for future drilling.

10 DRILLING

10.1 Introduction

Gustavson has validated 975 holes drilled at the Pan property since 1978. Historic drilling campaigns carried out by operators other than MIDWAY account for 766 of the total number of holes. Historic drilling is described in detail in previously filed reports, including Gustavson's 2010 Preliminary Feasibility Study.

10.2 Drilling by Midway Gold Corp.

As of September 1, 2011, MIDWAY has drilled a total of 209 holes for a total of 95,394 ft. Of the 209 holes drilled by MIDWAY, 195 were drilled using reverse circulation, and 14 are diamond core holes. Drilling exploration conducted by MIDWAY is summarized in Table 10-1, and drill hole distribution is shown on Figure 10-1.

Table 10-1 Midway Dilling Exporation Summary

Exploration Program (Year)	Number of Holes Drilled	Total Footage	Type of Drill Hole
2007-2008	162	61,875	RC
2010	14	5774.5	Core
2011	33	27,744.5	RC

MIDWAY completed 33 reverse circulation (RC) holes in 2011. Data from these holes was added to the project database, and was used to update the Pan mineral resource estimate. Drill hole information from drilling completed from January through June 2011 is summarized in Table 10-2.

Table 10-2 2011 Drill Hole Summary

Hole ID	Area	Northing (ft)	Easting (ft)	Northing (m)	Easting (m)	Elevation (ft)	TD	Date Completed	Dip	Azimuth	Purpose
PN11-01	S.Dep	14270552.22	1998752.916	4349673.016	609221.1072	6977.43	450	1/19/2011	-65	275	Resource
PN11-02	S.Dep	14272129.29	1998525.103	4350153.708	609151.6697	6831.36	560	1/29/2011	-75	270	Resource
PN11-03	S.Dep	14272211.68	1998838.24	4350178.82	609247.114	6796.22	570	2/3/2011	-70	270	Resource
PN11-04	S.Dep	14272182.5	1999069.96	4350169.926	609317.7424	6838.91	800	2/13/2011	-90	None	Resource
PN11-05	S.Dep	14271994.47	1999047.982	4350112.615	609311.0435	6834.19	654	2/16/2011	-90	None	Resource
PN11-06	S.Dep	14272409.22	1998944.925	4350239.031	609279.6317	6791.72	680	2/23/2011	-90	None	Resource
PN11-07	S.Dep	14272420.96	1998805.859	4350242.609	609237.2443	6777.94	600	2/26/2011	-90	None	Resource
PN11-08	S.Dep	14271392.6	1999364.466	4349929.164	609407.5081	6883.61	620	3/2/2011	-90	None	Resource
PN11-09	S.Dep	14271867.75	1999245.998	4350073.99	609371.3989	6880.66	750	3/12/2011	-90	None	Resource
PN11-10	S.Dep	14271663.27	1999271.248	4350011.665	609379.0951	6875.71	750	3/14/2011	-90	None	Resource
PN11-11	S.Dep	14273269.31	1998896.799	4350501.187	609264.9629	6730.77	700	3/17/2011	-90	None	Resource
PN11-17	Heap	14275730.44	1994893.624	4351251.341	608044.7927	6744.17	1300	3/23/2011	-90	None	Condemnation
PN11-12	S.Dep	14273236.97	1998700.482	4350491.329	609205.1253	6749.03	700	3/27/2011	-80	278	Resource
PN11-13	S.Dep	14272615.5	1998711.867	4350301.905	609208.5955	6772.67	600	3/30/2011	-75	133	Resource
PN11-18	Heap	14274966.78	1995829.893	4351018.577	608330.168	6550.17	1435	3/30/2011	-70	133	Condemnation
PN11-14	S.Dep	14273638.6	1998727.974	4350613.747	609213.5049	6729.41	700	4/6/2011	-75	220	Resource
PN11-15	S.Dep	14273935.52	1998425.131	4350704.248	609121.1982	6753.79	780	4/10/2011	-75	90	Resource
PN11-19	Heap	14274670.99	1996129.294	4350928.42	608421.4257	6543.61	1450	4/10/2011	-70	130	Condemnation
PN11-16	S.Dep	14273445.42	1998612.7	4350554.865	609178.3693	6755.6	700	4/13/2011	-90	None	Resource
PN11-20	Heap	14274787.34	1995969.275	4350963.883	608372.6518	6531.94	800	4/13/2011	-80	130	Condemnation
PN11-30	S.Pan	14273648.92	1998516.91	4350616.892	609149.1725	6751.3	690	4/20/2011	-90	None	Resource
PN11-31	N.Rock Pile	14280607.49	1997928.55	4352737.868	608969.84	6667.53	650	4/22/2011	-70	90	Condemnation
PN11-21	Heap	14275690.93	1996341.796	4351239.298	608486.1964	6581.58	1500	4/23/2011	-80	90	Condemnation
PN11-22	Heap	14276750.67	1996346.337	4351562.307	608487.5805	6592.32	1500	4/26/2011	-75	90	Condemnation
PN11-32	E.Heap	14272719.63	1992674.556	4350333.644	607368.4194	6393.96	850	4/26/2011	-70	90	Condemnation
PN11-33	S.Rock Pile	14271400.53	1996667.375	4349931.581	608585.4331	6687.87	900	5/4/2011	-90	0	Condemnation
PN11-23	Heap	14274621.03	1994159.031	4350913.192	607820.8883	6447.69	1418.5	5/9/2011	-70	90	Condemnation
PN11-34	S.Rock Pile	14269746.67	1997203.947	4349427.484	608748.9805	6704.7	497	5/9/2011	-70	90	Condemnation
PN11-24	E.Heap	14275327.94	1992689.707	4351128.658	607373.0374	6363.27	1200	5/19/2011	-80	90	Condemnation
PN11-35	Heap	14272804.65	1995020.974	4350359.558	608083.609	6538.05	830	5/23/2011	-75	90	Condemnation
PN11-36	Heap	14272636.4	1996272.06	4350308.28	608464.939	6588.52	450	5/23/2011	-70	90	Condemnation
PN11-37	Heap	14273560.7	1994195.49	4350590	607832	6595	830	6/4/2011	-70	90	Condemnation
PN11-29	Heap	14277054.78	1992404.15	4351655	607286	6415	830	6/5/2011	-70	90	Condemnation
33	Total Holes					Total:	27744.5			Total Condemnation	16440.5
17	Resource holes					June Footage	1660			Total Resource	11304
16	Condemnation										

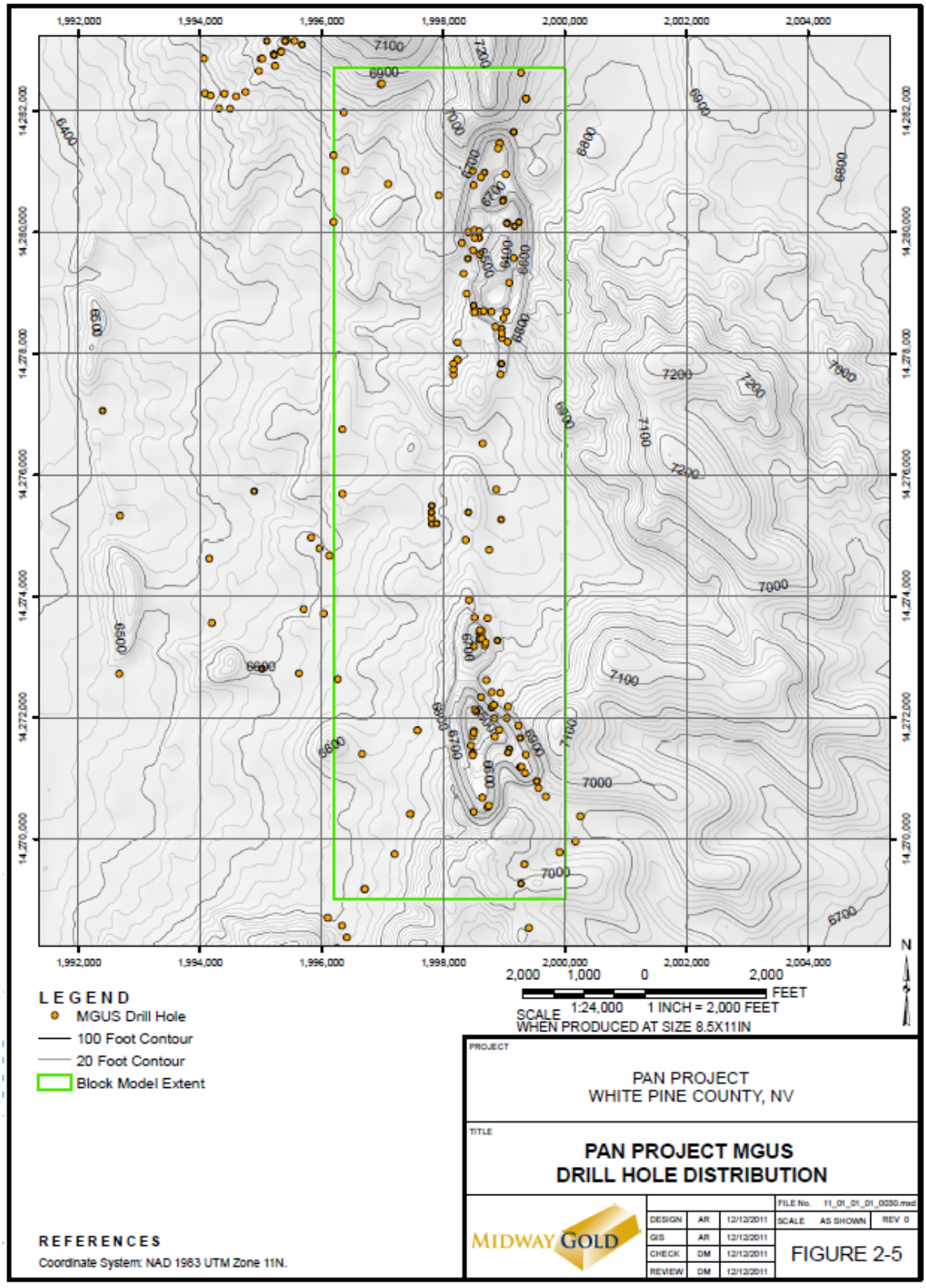


Figure 10-1 Pan Project MIDWAY Drill Hole Distribution

10.2.1 Drilling Procedures and Conditions

Drilling conditions at Pan are favorable given the moderate terrain and existing road network. Drill sites are prepared by digging a sump and leveling a pad for the drill rig, if necessary. Holes are generally collared in bedrock and completed above the water table. Historical drilling results and recent hydrologic data indicate that the water table is at least 1,000 ft below ground surface.

RC and rotary methods were used for nearly all drilling at Pan to date. RC drilling was generally carried out using a down hole hammer with hammer bits ranging in diameter from 4 ½ to 5 ¾". The use of Tricone bits was limited to a small number of holes where drilling conditions prevented penetration and sample recovery using the down hole hammer. These holes were generally cased to depths of 10 to 20 ft.

Most of the core holes drilled at the Pan property were advanced using HQ (2½ inch) size core from ground surface and with no precollars. Core recovery was generally good, but core loss increased in highly fractured and brecciated rock commonly associated with mineralization. Core recovery is discussed in further detail below.

10.2.2 Drill hole Collar Surveys

A digital database of collar locations for the Pan Project was developed by MDA for the 2005 resource estimate. This data was physically compared to all known drill logs to confirm locations and no errors were identified.

A licensed surveyor surveyed all MIDWAY holes. The UTM NAD 83 coordinate locations of MIDWAY holes were compared to associated proposed locations, topography, and GPS coordinates to evaluate accuracy and identify errors.

Geologic logs were completed for each drill hole and are compiled in the Pan Project database. Since 2007, MIDWAY geologists have logged core data directly into Microsoft Excel® spreadsheets using an on-site laptop station during drilling. The logging terminology for formation, lithology, alteration, oxidation, and waste type were preapproved, and any changes to the form required the approval of the project manager. MIDWAY did collect core samples from the 2010 and 2011 drilling programs. Core samples from previous operators have either been consumed or lost. All project drill logs are printed and catalogued by hole name, together with related drill information, in binders maintained by MIDWAY. All collar and drill log information was imported into a secure Microsoft Access® database, stored on the main project computer, and backed up to the corporate server. For security, access to the primary database is limited to the MIDWAY project manager.

10.2.3 Down hole Surveys

Down hole surveys were completed at Pan for all MIDWAY drilling.

10.2.4 Extent of Drilling

Drill hole spacing at ground surface ranges from 100 ft to over 400 ft, but is generally on nominal 100 ft centers. The majority of the drill holes (65%) were advanced vertically. Approximately half of the holes drilled at an angle were oriented westerly, and one third of the angled drill holes were oriented easterly. Intercepts equal to or greater than 20 ft with grades equal to or greater than 0.010 ozAu/st were encountered in 464 of the total 864 holes drilled at the property since 1978. The intercept downhole thickness does not necessarily represent the true thickness of mineralization. With few exceptions, drilled lengths are greater than true thicknesses.

10.2.5 MIDWAY Data Compilation and Grid Conversion

For the 2005 resource estimate, MDA converted the Pan database from a local coordinate system to NAD83, Zone 11 UTM coordinates, expressed in US ft.

10.3 Sampling Method and Approach

The Pan drill hole database includes sample data from reverse circulation, core, and rotary drilling. Drilling was performed by a variety of operators during a total of nine drilling campaigns over a 20-year period. Drill spacing is on nominal 100 ft centers at North Pan and Central Pan, and nominal 165 ft centers at South Pan. Drill spacing tighter than 100 ft centers occurs in some areas of mineralization at North Pan and Central Pan. Most RC and rotary samples (99%) were collected on 5 ft intervals, and all core samples were collected on intervals of 5 ft or less. Very little documentation is available on drilling and sampling procedures employed prior to 2004. However, the drilling was conducted by companies experienced in exploration and production and is considered reliable.

MIDWAY performed RC drilling at Pan in 2007 and 2008, and again in 2011. The drilling was performed wet, with water injection between 1 and 2 gallons per minute. Groundwater was encountered in the deeper holes, the deepest of which was drilled to a depth of 1500 ft.

RC samples were collected every 5 ft by a designated and trained sampler provided by the drilling contractor. Cuttings from each interval were passed through a cyclone and into a rotary vane splitter with 16 openings. The number of splitter openings was adjusted to maintain a roughly constant sample size of 7 kg. A representative split from the discharge material was placed into a plastic RC chip tray for geological logging. The chip tray was marked with the drill hole name and downhole interval.

RC samples were collected in large micro-pore bags marked with the sample number and suspended from the discharge tube of the splitter. Overflow was minimal because of low water injection rates and lack of groundwater. Nominal sample weight was 5 to 10 kg.

RC samples were allowed to drain at the drill site and were taken to a Eureka (2007-2008) or Ely (2010-2011) office facility at the end of each day by MIDWAY personnel. Samples were stored in secure bins until transported to an assay laboratory in Elko or Winnemucca by certified laboratory personnel.

During the 2010 drilling campaign carried out by MIDWAY, core was placed in core boxes by the drill crew at the drill site. Core boxes were picked up from the rig daily and transported to the MIDWAY logging facility. Geotechnical measurements including RQD and rock strength data were collected before the core was placed in the core box. Then the core was washed and photographed with color and scale cards included. A geologist selected appropriate intervals for sampling, and logged and photographed the core prior to splitting or sampling. The preferred sample interval and maximum sample length was 5 ft. Smaller intervals were used where significant geological breaks occurred, but not less than 1 ft.

Core was split using a diamond saw where competent. A manual splitter was used for core not suitable for sawing. In soft clay zones, a putty knife was used to split the core. A quarter split was used for assay purposes. The remaining core was sampled for metallurgical and waste rock characterization testing. Skeleton core, a small piece every 2-3 ft, was saved for the core archive. The remainder of the core was sent to the lab.

ALS Chemex picked up the assay samples from the Ely office and transported them to a Nevada prep facility. For quality assurance and quality control, standards and blanks were inserted into the sample stream at a rate of one for every 25 project samples. Commercial Standard Reference Materials (SRM's) and blanks were acquired from Shea Clark Smith in 2007 and 2008 and from Ore Research & Exploration (Ore Research) of Bayswater North, Australia in 2010 and 2011. SRM's grading 0.01 opt Au and 0.03 opt Au were alternated with blanks in the sample stream.

11 SAMPLE PREPARATION, ANALYSES, AND SECURIITY

Based on available assay certificate information, samples collected during the ten drilling campaigns at Pan were analyzed for gold by fire assay (AuFA) and/or gold cyanide extraction assay (AuCN). Gustavson and Dr. Baker consider the sample preparation, security, and analytical procedures to be adequate for use in resource and reserve estimation. Table 11-1 summarizes the type of assay data currently in the database.

Table 11-1 Drill Data by Analytical Method

Company	Number AuFA Determinations	Number AuCN Determinations	AuCN/AuFA Pairs	AuCN Only	Percent of Data Represented by AuCN Data
Amselco	610	3,641	303	3,338	84.6
Hecla	121	0	0	0	0
Echo Bay	3,980	0	0	0	0
Alta Bay	6,288	13,318	6,284	7,034	52.8
Latitude	2,874	0	0	0	0
Castleworth/ Pan Nevada	13,738	254	254	0	0
Southwest	282	0	0	0	0
MIDWAY	26,099	1,190	1,190	0	0
TOTAL	**53,992**	**18,403**	**8,031**	**10,372**	**19.2**

11.1 Sample Preparation and Analysis Procedures

RC samples collected by MIDWAY were processed by ALS Chemex in Elko and Winnemucca, and by SGS Laboratories in Elko, Nevada. Standards and blanks developed and/or purchased by MIDWAY were included in the sample sets dispatched to the laboratory. At the labs, samples were crushed to 70% passing -6mm, split to 250g using a riffle splitter, then pulverized to 85% passing 75 microns. Pulps were analyzed using 30g fire assay with an AA finish. Higher grade samples (>0.291 ozAu/st) received a gravimetric finish. For samples returning greater than 300 ppb Au, a cyanide leach analysis was performed. A one-hour cyanide digestion was completed on a 30g sample pulp, followed by AA determination of gold content in the pregnant cyanide solution. MIDWAY data from 9,957 sample intervals with AuFA determinations, and 1,035 sample intervals with paired AuCN information, are included in the Pan database.

12 DATA VERIFICATION

MDA (2005) and AMEC (2008) verified exploration and drilling data through 2007. Both companies found the logs, surveys, and assays in the Pan mineral resource database accurately represent the source documentation. MIDWAY did a complete check of the Pan database in 2007; MIDWAY reinterpreted drill logs and created new interpretations of geology and alteration on cross sections in 2010 and 2011. Gustavson generated a new model based on the updated geologic sections including lithology and alteration.

MIDWAY personnel verified exploration data collected after January 1, 2008, including checking logs, surveys, and assays. 100% of the 2008 data matches the original information, constituting an error of less than 0.01%. Gustavson independently verified exploration data collected from 2009 through the effective date of this report, September 1, 2011, by checking logs and assay data against core samples, field checking survey data, and comparing assay data reported by MIDWAY to laboratory assay certificates. Gustavson finds the quality of data collected to date adequate for use in estimating the mineral resources of the Pan Project.

12.1 Check Assays

In 2007, MIDWAY conducted a rig duplicate program, collecting a duplicate sample from most of the holes completed during the year. Duplicate samples were collected on site approximately every 100 ft. The original assay and duplicate samples were then sent to the same laboratory for analysis. Duplicate samples were split and analyzed using the same procedures as the original sample.

For samples with values less than detection limit (5 ppb), the gold value was set to 0.0 ppb. Sample weights were also compared in order to ensure that the duplicates were representative of the original sample. MIDWAY utilized two assay laboratories (ALS Chemex and SGS) for this study. The sample statistics are reported by assay laboratory in Table 12-1. The close correlation between the original and duplicate sample results is presented graphically in Figure 12-1.

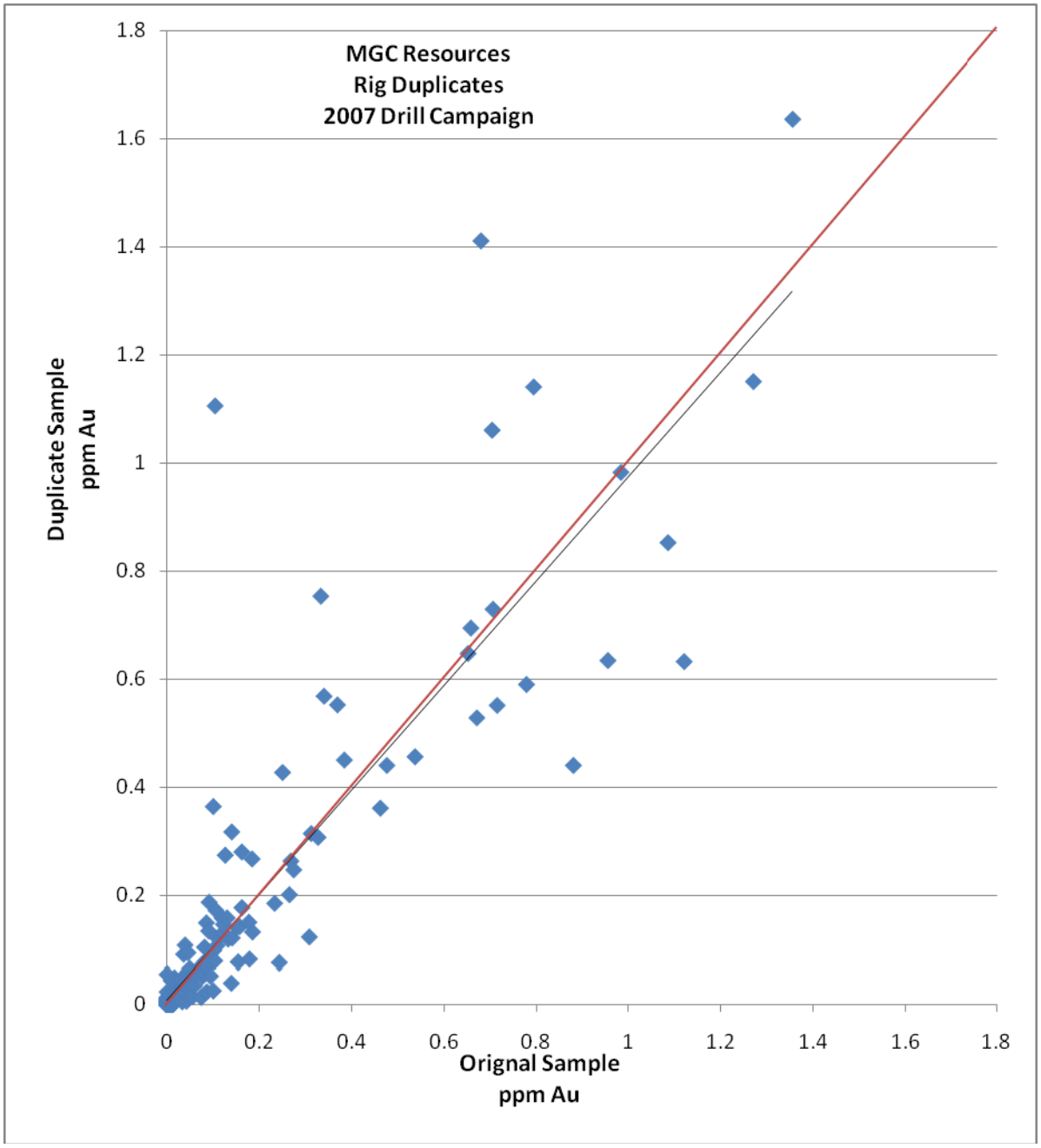


Figure 12-1 MIDWAY Rig Duplicates

Based on a total of 316 samples, original assays average 0.0958 ppm Au, and range from 0 to 3.68 ppm Au. Duplicates average 0.0951 ppm Au, ranging from 0 to 1.76 ppm Au.

Table 12-1 Descriptive Statistics of MIDWAY Duplicate Rig Samples

	ALS-Chemex Original (Au ppm)	ALS-Chemex Duplicate (Au ppm)	SGS Original (Au ppm)	SGS Duplicate (Au ppm)	All (Au ppm)	All (Au ppm)
Mean	0.1107	0.1062	0.0650	0.0722	0.0958	0.0951
Standard Dev	0.3323	0.2702	0.1638	0.1683	0.2889	0.2420
Min	0.000	0.0000	0.0000	0.0000	0.0000	0.0000
Max	3.6800	1.7600	1.2700	1.1500	3.6800	1.7600
Count	213	213	103	103	316	316

12.2 Midway Gold Corp. QA/QC Programs

SRK reviewed the QA/QC data from 2007 and 2008 drilling and reported the results of that review in 2009. The following summary is based on information from the 2009 SRK review:

MIDWAY maintained a regular program of commercial SRM's as well as blanks and rig duplicates (2007 only). Standards were purchased from Shea Clark Smith of Reno, Nevada, at increments of 0.55, 1.0, and 2.0 ppm Au. MIDWAY employed the following QA/QC protocols during 2007 and 2008 drilling:

- Rig duplicates, every 100 ft
- Coarse (1/4 inch minus) blank reference material, 1 per 50, minimum 1 per hole
- Standards (-200 mesh) reference material, 1 per 50, minimum 1 per hole

A limestone stockpile was used as coarse blank material in 2007 and 2008. In 2007, 115 coarse blank samples were used, with an average result of 0.0029 ppm Au. Nine blanks returned values of >0.013 ppm Au and were investigated further. Significant gold values were not returned in the sample assays from seven holes, and these samples were not rerun. The remaining two holes were reanalyzed for gold, along with a fresh blank sample.

In 2008 a different portion of the limestone stockpile was used as a source for the coarse sample blanks. These samples returned anomalous gold results (>0.030 ppm Au) and use of the blanks was discontinued until a better blank control could be located. Commercial blank material was obtained and used during the 2010 and 2011 drilling programs.

Industry standards were obtained and submitted blindly with drill samples. Three standards at a 2.0 ppm, 1.0 ppm, and 0.55 ppm threshold were utilized. Values within $\pm$1 standard deviation (std) were considered valid and accepted into the database. Values greater than $\pm$1 std were further investigated and either reanalyzed or accepted into the database, as appropriate. The 2.0

ppm standard was frequently found to be outside of the +1 std, and use of the 2.0 ppm threshold was discontinued in mid-2007.

Based on the protocol employed by MIDWAY and the standard/blank assay results, Gustavson finds the quality of the assays completed in 2007 and 2008 acceptable.

Gustavson reviewed sampling and assaying protocols from the 2010 and 2011 drilling programs. Standards, blanks, and duplicates are inserted into the sample numbering scheme at rates of 4%, 3%, and 3%, respectively. Standard sample assay results are analyzed under the guidelines outlined above. Analysis of laboratory quality control and MIDWAY quality assurance analytical results is conducted in concert with receipt of analytical results from the laboratory, and an inter-laboratory check assay program is carried out to ensure no systematic bias between or among the commercial laboratories. Gustavson finds MIDWAY's QA/QC procedures and protocols satisfactory according to current industry standards.

12.3 Twin Hole Study

Two twin holes were drilled by MIDWAY as part of the QA/QC program. Two RC holes, PN11-01 and PN11-02, were drilled as twins to two diamond core holes, PN10-01C and PN10-10C, respectively. To compare the diamond core holes (assayed at varying intervals) with the RC holes (assayed at regular 5 ft intervals), the diamond core hole assay data were composited to 5 ft intervals. Initial comparisons of grade versus depth for each set of holes were dominated by variability over the 5 ft intervals; so all holes were composited sliding downhole at 25 ft intervals to smooth out these effects.

Drill holes PN10-01C and PN11-01 show favorable correlation in a grade versus depth comparison (Figure 12-2). This comparison is useful in showing that higher-grade zones occur at similar depths in both holes. Both holes are lithologically similar, being logged as mostly solution breccia of the Devils Gate Limestone. The generally higher grades in PN11-01 in the interval from ~140 ft to ~270 ft may be due to lithologic variations or due to the natural variability of grade in the system.

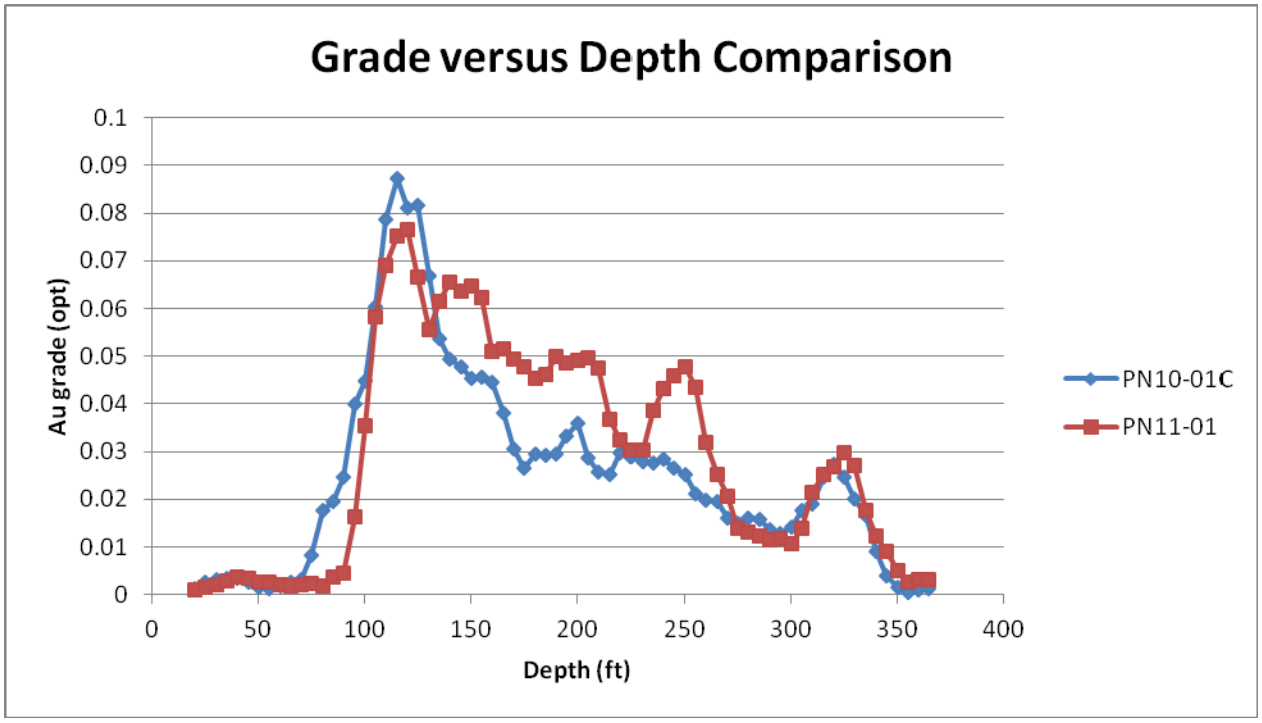


Figure 12-2 Grade vs. Depth Comparison 1

Drill holes PN10-10C and PN11-02 also show good correlation in a grade versus depth comparison (Figure 12-3). Again, both holes are logged as mostly solution breccias of the Devils Gate Limestone. Higher grading zones occur at similar depth intervals in both holes, suggesting some lateral continuity. Correlation is particularly strong in the ~200 ft to 400 ft interval. The RC hole again shows generally higher assay values.

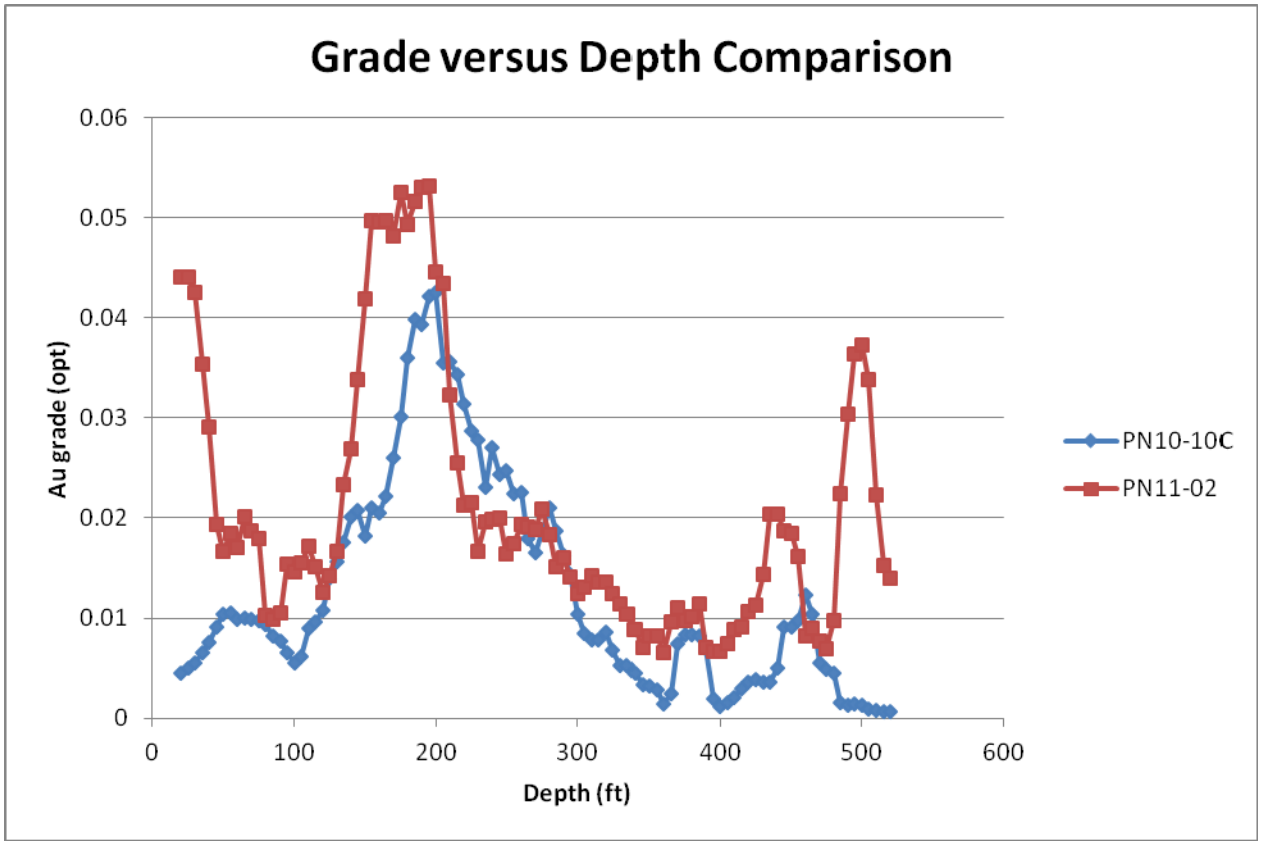


Figure 12-3 Grade vs. Depth Comparison 2

13 MINERAL PROCESSING AND METALLURGICAL TESTING

13.1 Ore Sampling and Test Work

Extensive metallurgical testing has been undertaken on samples from the Pan Project. Ongoing metallurgical analysis of fresh core samples and trench samples collected in 2010 was initiated in December 2010 by MIDWAY, and is conducted by Resource Development Inc. (RDi). The primary objective of this analysis is to generate sufficient metallurgical data for use in Preliminary Feasibility and Feasibility Studies. Data from both previous work and from the ongoing test program indicate that the ore is amenable to heap leaching with economic recoveries. The analysis described in this section is limited to the ongoing test program, as previous test work was discussed in detail in the 2010 Preliminary Feasibility Study.

13.2 Ongoing Metallurgical Test work

RDi received three surface samples, designated NP 1, NP 2, and SP 1, and a ½ split of HQ (2.5-in diameter) drill core from thirteen drill holes. Seven of the drill holes are located in South Pan, and six are located in North Pan. A total of twenty nine composites were prepared from the drill hole samples. The composites were prepared to evaluate different lithologies, ore types, and feed grades. Composites 1 to 10 represent North Pan and composites 11 to 29 represent South Pan. The lithology associated with each composite sample is identified in Table 13-1.

Table 13-1 Lithology of Composite Samples

Lithology of Composite Samples		
Pit	**Lithology**	**Composites**
North Pit	Sbs	1-8, 10, NP-1, NP-2
	SbA	9
South Pit	ShA	11, 28, 29
	ShS	12, 13
	SbA	14-18, 22, 24-27, SP-1
	SbA	19, 23
	HbS	20
	HbA	21

Detailed information regarding sample preparation protocols and quality control procedures is presented in a report prepared by RDi, “Midway Gold Corporation, Metallurgical Testing of Midway Pan Samples”, dated September 14, 2011. The following paragraphs summarize the metallurgical test results described in the text of that report.

13.2.1 Head Assays

The results of head analyses conducted on the composite samples are given in Table 13-2. The samples were submitted for gold and silver assay using one-assay-ton fire assay, mercury, and preg robbing analyses.

Table 13-2 Head Analyses of Composite Samples

Composite No.	Assay		
	Au, g/t	Hg, g/t	% Preg-Robbing
North Pan			
NP-1	0.814	0.68	-
NP-2	2.446	1.01	-
1	0.271	0.60	<0.6
2	0.267	1.52	<0.6
3	2.153	2.11	<0.6
4	0.377	1.45	1.1
5	0.693	1.38	2.92
6	0.226	3.90	<0.6
7	0.439	1.98	6.8
8	0.720	1.41	2.3
9	0.521	5.63	3.8
10	0.727	0.56	<0.6
South Pan			
SP-1	0.302	3.58	-
11	0.418	2.71	2.92
12	0.401	0.80	3.4
13	0.535	1.38	<0.6
14	0.230	2.58	0.6
15	0.350	3.20	<0.6
16	0.645	3.12	4.68
17	0.504	2.23	<0.6
18	0.826	3.64	<0.6
19	0.384	2.24	1.7
20	0.542	2.13	6.2
21	0.682	1.22	<0.6
22	0.593	1.64	<0.6
23	1.327	1.96	1.5
24	1.265	1.48	4.0
25	0.250	1.35	<0.6
26	1.087	1.30	<0.6
27	0.483	1.41	<0.6
28	1.035	1.60	5.7
29	0.542	0.78	<0.6

The head analyses indicate the following:

- The gold assays range from 0.023 g/t Au to 2.15 g/t Au
- The mercury values in these samples range from 0.56 to 5.63 g/t Hg
- The majority of the composites exhibited negligible preg-robbing properties

13.2.2 XRF Analyses

X-ray fluorescence (XRF) analyses were conducted on selected samples representing the various composite lithologies, and on the surface samples. The XRF test results are presented in Table 13-3. Test results indicate that traces of arsenic were present in the samples, though the major elements present were silica and alumina.

Table 13-3 XRF Analyses

Surface Samples

Element	Sample			Element	Sample		
%	NP1	NP2	SP1	ppm	NP1	NP2	SP1
Na_2O	<0.05	0.09	0.11	V	28	56	125
MgO	0.25	0.57	0.80	Cr	133	64	128
Al_2O_3	6.25	10.0	11.7	Co	<10	<10	<10
SiO_2	87.6	75.7	75.1	Ni	<10	13	25
P_2O_5	0.08	0.17	0.29	W	<10	<10	<10
S	1.59	2.84	1.37	Cu	11	19	27
Cl	<0.02	<0.02	<0.02	Zn	25	31	92
K_2O	1.38	2.72	2.76	As	845	164	1628
CaO	0.17	0.45	1.65	Sn	<50	<50	<50
TiO_2	0.27	0.39	0.44	Pb	48	17	16
MnO	<0.01	<0.01	<0.01	Mo	<10	<10	<10
Fe_2O_3	1.68	3.68	4.63	Sr	56	129	256
BaO	1.72	1.31	0.09	U	<20	<20	<20
				Th	<20	<20	<20
				Nb	<10	12	14
				Zr	157	231	238
				Rb	32	78	63
				Y	11	21	24

XRF Analysis – Different Rock Types

Element,	Composite No.					
%	7	12	15	20	21	28
Na_2O	<0.05	0.14	<0.05	<0.05	<0.05	<0.05
MgO	0.35	0.37	0.89	0.29	0.23	1.11
Al_2O_3	5.23	8.70	9.68	6.26	6.04	8.55
SiO_2	90.0	82.6	76.3	88.9	82.1	74.3
P_2O_5	0.14	0.19	0.28	0.26	0.24	0.19
S	0.42	1.41	0.33	0.64	1.63	<0.05
Cl	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
K_2O	1.34	1.78	2.62	1.40	1.77	2.35
CaO	0.07	0.14	2.60	0.19	0.15	2.43
TiO_2	0.24	0.37	0.42	0.31	0.32	0.39
MnO	<0.01	<0.01	0.04	<0.01	<0.01	0.04
Fe_2O_3	1.13	2.83	4.12	2.64	2.86	3.23
BaO	0.07	0.03	0.14	0.04	0.18	0.03

13.2.3 XRD Analysis

X-ray diffraction (XRD) analyses provide an indication of major minerals in the samples. The samples analyzed by XRF were also analyzed by XRD. The results of the XRD analyses indicate that the major host rock minerals are quartz, mica/illite, and alunite. The XRD test results are summarized in Table 13-4.

Table 13-4 XRD Test Results

XRD Analysis of Different Rock Types									
Element, ppm	Approximate Wt. %								
	7	12	15	20	21	28	NP1	NP2	SP1
Quartz	85	74	63	83	79	66	85	70	63
Mica/illite	10	7	24	9	6	21	5	10	16
Kaolinite	-	8	<5	<5	<3	5	-	-	8
K-spar	-	-	-	-	-	3?	-	-	-
Alunite	<3	9	-	<5	10	-	8	14	9
Calcite	-	-	<5		-	10	-	-	<3
Hematite	<2?	<3	<3	<3	<3	-	-	<3	<3
Barite	-	-	-		-	-	<5	<3	-
Unidentified	<5	<5	<5	<5	<5	<5	<3	<5	<5

13.2.4 ICP Analysis

The results of ICP analysis of the composite samples are summarized in Table 13-5. The results of the ICP analyses are similar to the results of XRF analyses of the composite samples.

Table 13-5 ICP Analyses of Composite Samples

Element, %	Composite No.								
	1	2	3	4	5	6	7	8	9
Al	2.46	1.99	1.99	2.14	2.44	4.03	2.20	2.68	3.71
Ca	0.09	0.07	0.09	0.08	0.06	4.49	0.08	0.83	1.90
Fe	0.89	0.68	0.81	1.43	1.44	2.32	0.69	0.69	2.15
K	1.00	0.86	0.69	0.85	0.80	1.70	1.02	1.21	1.50
Mg	0.12	0.14	0.12	0.06	0.06	0.38	0.14	0.23	0.29
Na	0.03	0.05	0.05	0.03	0.06	0.04	0.03	0.08	0.04
Ti	0.08	0.03	0.06	0.06	0.03	0.09	0.05	0.05	0.10
Element, ppm									
As	88	249	179	279	562	342	145	100	436
Ba	417	1995	1955	8020	858	5219	798	2344	7730
Bi	26	<10	<10	22	<10	36	18	20	41
Cd	3	0	1	9	2	14	4	4	13
Co	5	10	<1	9	6	33	17	9	10
Cr	39	31	117	28	33	49	31	35	52
Cu	69	16	20	43	16	52	41	63	53
Mn	13	17	13	13	35	260	18	40	146
Mo	2	4	5	9	8	8	10	2	8
Ni	14	18	23	15	22	152	20	25	61
Pb	78	52	39	185	29	146	64	82	101
Sr	116	81	107	196	168	164	84	137	254
	105	81	106	60	81	107	84	62	85
W	44	168	<10	77	63	25	105	75	51
Zn	36	62	43	70	76	574	65	227	233

Table 13-5 cont.

Element, %	Composite No.										
	10	11	12	13	14	15	16	17	18	19	20
Al	2.17	5.55	3.72	4.65	3.77	4.41	3.92	3.27	3.89	2.41	3.07
Ca	0.09	6.59	0.11	0.46	16.02	1.43	0.13	0.11	0.12	0.10	0.12
Fe	0.49	2.81	1.65	4.69	1.94	2.28	1.92	1.67	1.85	1.80	1.58
K	0.70	2.33	1.30	1.27	1.60	2.16	1.25	1.17	1.51	0.97	1.16
Mg	0.15	0.79	0.13	0.22	0.32	0.31	0.11	0.12	0.15	0.14	0.13
Na	0.05	0.07	0.13	0.10	0.09	0.07	0.13	0.06	0.04	0.05	0.03
Ti	0.09	0.07	0.08	0.14	0.09	0.11	0.04	0.08	0.10	0.06	0.07
Element, ppm											
As	39	3120	350	1120	451	851	2360	1012	1063	464	302
Ba	295	426	216	273	430	952	332	378	617	1056	328
Bi	<10	27	31	11	32	41	<10	27	29	21	26
Cd	1	6	10	6	12	25	2	27	30	12	8
Co	2	36	3	5	5	11	3	4	4	5	2
Cr	92	59	57	95	43	65	43	52	52	41	52
Cu	20	31	37	34	19	27	11	22	41	24	42
Mn	4	1226	30	73	585	334	15	16	10	18	8
Mo	2	21	20	24	7	9	9	6	9	2	4
Ni	19	148	33	57	52	83	23	31	33	26	14
Pb	28	29	81	34	38	77	24	49	52	30	53
Sr	111	127	194	160	263	270	174	191	211	190	200
V	92	60	211	331	73	100	95	226	171	191	141
W	12	18	19	<10	6	11	28	22	26	37	20
Zn	33	199	92	84	154	351	77	69	108	121	117

Table 13-5 cont.

Element, %	Composite No.								
	21	22	23	24	25	26	27	28	29
Al	3.24	2.88	2.86	1.92	3.16	1.27	2.38	4.25	3.87
Ca	0.16	25.32	15.22	24.20	19.68	8.30	21.13	1.56	0.11
Fe	2.07	1.47	1.31	1.08	2.01	0.63	1.31	2.02	2.19
K	1.45	1.18	1.15	1.03	1.54	0.63	1.26	1.86	1.42
Mg	0.10	0.31	0.38	0.34	1.97	0.23	1.87	0.38	0.38
Na	0.02	0.05	0.05	0.05	0.02	0.01	0.05	0.07	0.06
Ti	0.09	0.09	0.09	0.06	0.09	0.04	0.06	0.11	0.05
Element, ppm									
As	428	752	219	791	527	59	264	458	1165
Ba	2186	5600	10234	6487	18218	21697	4873	286	556
Bi	26	28	<10	22	34	16	22	34	21
Cd	14	21	2	22	18	7	9	14	3
Co	3	7	<1	4	16	8	6	9	6
Cr	58	34	78	28	36	16	31	49	45
Cu	40	19	19	21	77	82	15	31	21
Mn	8	2666	1183	1786	638	492	2418	311	89
Mo	2	10	4	12	9	5	4	17	19
Ni	20	32	24	20	44	12	23	68	76
Pb	34	35	37	26	36	44	29	31	40
Sr	145	163	88	124	200	76	146	178	97
V	138	39	11	27	39	30	35	173	211
W	31	7	<10	7	10	63	8	9	25
Zn	110	235	198	212	140	161	262	183	195

13.2.5 Crushability Work and Abrasion Index

Crusher work index and abrasion index tests were performed on six samples, each representing a different lithology. The test results, summarized in Table 13-6, indicate that the surface samples were relatively hard and abrasive whereas the drill core samples were softer and non-abrasive.

Table 13-6 Crushability and Abrasion Test Results

Crushability Work Index and Abrasion Index for Composite Samples			
Sample	**Lithology**	**Crushability Wi (Kw-hr/st)**	**Ai**
Composite 7	SbS	6.15	0.0450
Composite 12	ShS	6.02	0.0086
Composite 15	SbA	4.92	0.0052
Composite 20	HbS	3.23	0.0022
Composite 21	HbA	7.46	0.0405
Composite 28	ShA	8.91	0.0107
NP-1	SbS	16.94	0.2820
NP-2	SbS	8.22	0.0780
SP-1	SbA	12.44	0.0236

13.2.6 Static Bucket Leach Tests for Surface Samples

The as-received surface samples were screened into six size fractions, and the individual fractions of equal size were combined in order to obtain a sufficient amount of each. The size fractions were placed into a plastic container and covered with a 1 g/L NaCN solution. The material was gently mixed and allowed to stand. A sample of the slurry was taken for pH and free cyanide measurement and gold assay. The pH of solution was adjusted to 11 and NaCN concentration to 1 g/L. Following the completion of the test, the solids were filtered, washed, and dried. The dried material was pulverized and assayed for gold.

Static bucket leach test results are summarized in Table 13-7. The test results indicate the following:

- Gold extraction from the coarsest to the finest size fractions was good for the SP-1 sample; gold recovery is not size dependent for the South Pan samples.
- The gold leaches very quickly, even from the coarse size fractions for the South Pan samples.
- Gold extractions for the two North Pan samples were size dependent; the finer the crush size, the higher the gold extraction.
- The gold extraction was acceptable once the North Pan samples were crushed to 0.5-inch or finer.

Table 13-7 Static Bucket Leach Test Results

Static Bucket Leach Tests (21-day duration)									
Size (inches)	Sample SP-1			Sample NP-1			Sample NP-2		
	Extraction % Au	Residue g/t Au	Cal. Feed g/t Au	Extraction % Au	Residue g/t Au	Cal Feed g/t Au	Extraction % Au	Residue g/t Au	Cal. Feed g/t Au
3x4	93.7	0.189	3.013	51	0.399	0.815	52.4	0.547	1.15
2x3	76.7	0.034	0.146	58.3	0.394	0.946	59.2	0.879	2.169
1.5x2	86.4	0.046	0.339	53.3	0.42	0.899	64.2	0.437	1.22
1x1.5	84	0.069	0.432	65.1	0.153	0.438	59.3	0.674	1.656
0.5x1	86.2	0.086	0.622	64.2	0.149	0.416	84	0.233	1.453
-0.5	85.6	0.154	1.072	70.6	0.18	0.612	79.2	0.381	1.832

13.2.7 Bottle Roll Leach Tests

Cyanide bottle roll leach tests were performed on each composite sample at P80 6-mesh and 200-mesh. The test results are summarized in Tables 13-8 and 13-9. The test results show that gold extraction from the North Pan samples was poor for most composites (28% to 65%) at 6-mesh, but improved significantly (to over 75%) at P80 200-mesh. This suggests that gold extraction is size dependent at North Pan. Gold extraction from the South Pan samples was over 70% at 6-mesh and over 80% at 200-mesh. The NaCN consumptions were reasonable for all the bottle roll leach tests.

Table 13-8 Bottle Roll Cyanidation Test Results – Composite Sample, 6-mesh

Bottle Roll Cyanidation Test Results for Composite Samples at 6-mesh						
Test No.	Composite No.	Extraction % Au	Residue g/t Au	Cal. Head	Reagent Consumption, kg/t	
					NaCN	Lime
BR-1	NP-1	82.9	0.12	0.68	0.176	2.542
BR-2	NP-2	85.3	0.38	2.56	0.173	6.094
27	1	71.9	0.09	0.306	0.056	2.607
7	2	48.7	0.12	0.23	0.301	2.723
39	3	28.7	1.41	1.971	0.121	2.549
28	4	65.3	0.15	0.436	0.054	2.008
8	5	52.3	0.43	0.89	0.12	1.749
29	6	74.4	0.1	0.386	Trace	3.597
49	7	33.7	0.34	0.51	0.12	2.688
17	8	34.4	0.45	0.69	0.113	2.942
50	9	85.2	0.11	0.728	0.233	2.978
40	10	60.5	0.32	0.802	0.058	2.489
BR-3	SP-1	89.5	0.06	0.6	0.288	3.523
9	11	58.2	0.17	0.41	0.109	4.335
18	12	72.8	0.14	0.5	0.297	2.995
41	13	91.9	0.07	0.863	0.112	6.922
19	14	78.1	0.06	0.26	0.355	2.926
20	15	82.5	0.06	0.33	0.109	4.424
10	16	65.4	0.23	0.67	0.239	2.581
21	17	72.2	0.16	0.57	0.171	3.067
30	18	73.4	0.32	1.209	0.176	2.91
22	19	59.5	0.18	0.45	0.11	2.644
51	20	81.3	0.09	0.503	0.229	3.363
52	21	76.8	0.18	0.768	0.16	2.533
23	22	76.5	0.14	0.6	0.248	2.755
42	23	63.1	0.53	1.422	Trace	1.905
24	24	70.2	0.39	1.31	0.292	2.423
31	25	77.5	0.08	0.351	0.103	2.404
32	26	45.4	0.66	1.209	Trace	1.917
25	27	81.9	0.1	0.54	0.418	2.745
26	28	93	0.09	1.25	0.231	4.645
11	29	68.5	0.15	0.46	0.296	3.63
Average North Pan		60.3	0.34	0.85	0.127	2.91
Average South Pan		73.9	0.19	0.71	0.189	3.23

Table 13-9 Bottle Roll Cyanidation Test Results – Composite Sample, 200-mesh

Bottle Roll Cyanidation Test Results for Composite Samples at 200-mesh						
Test No.	Composite No.	Extraction % Au	Residue g/t Au	Cal. Head	Reagent Consumption, kg/t	
					NaCN	Lime
BR-4	NP-1	90.8	0.07	0.72	1.309	3.31
BR-5	NP-2	88.6	0.28	2.41	0.465	5.501
33	1	85.4	0.09	0.594	0.115	5.881
12	2	79.8	0.06	0.29	0.159	5.248
43	3	75.2	0.56	2.235	1.279	7.983
34	4	87.4	0.07	0.556	0.125	4.656
13	5	82.6	0.15	0.89	0.125	4.641
35	6	87.5	0.07	0.591	0.597	3.571
36	7	75.6	0.17	0.687	0.116	5.031
45	8	81.5	0.16	0.879	0.34	6.622
37	9	89.1	0.07	0.643	0.112	4.107
48	10	77.2	0.16	0.697	1.125	7.055
BR-6	SP-1	89.7	0.05	0.49	0.153	6.119
14	11	71.9	0.12	0.42	0.111	7.087
44	12	83.2	0.11	0.63	0.221	6.17
53	13	87.3	0.08	0.624	0.222	3.057
54	14	81.8	0.04	0.217	0.227	3.009
55	15	80.6	0.07	0.362	0.157	4.621
15	16	92.9	0.05	0.65	0.229	5.55
56	17	80.8	0.12	0.608	0.168	3.885
38	18	87.8	0.17	1.396	0.108	5.314
57	19	79.1	0.1	0.484	0.282	3.508
58	20	86.8	0.07	0.559	0.28	1.586
59	21	87.8	0.14	1.151	0.104	2.907
60	22	84.2	0.09	0.577	0.097	3.248
61	23	82.4	0.25	1.42	0.098	2.757
62	24	81.8	0.23	1.269	0.046	2.798
46	25	83.6	0.06	0.347	0.15	6.912
47	26	82.3	0.2	1.153	0.11	5.823
63	27	86.7	0.07	0.504	0.095	3.225
64	28	88	0.16	1.311	0.088	4.248
16	29	63.2	0.18	0.48	0.102	6.151
Average North Pan		83.4	0.16	0.93	0.489	5.3
Average South Pan		83.1	0.12	0.73	0.152	4.4

After 72 hours of leach, the average gold extraction from the bottle roll leach tests at P80 6-mesh was 60.3% for North Pan samples and 73.9% for South Pan samples. Sodium cyanide consumption averaged 0.127 kg/t for the North Pan samples and 0.189 kg/t for the South Pan samples. The average head grades for the North and South Pan samples are 0.85 g/t and 0.71 g/t, respectively.

The average extractions at P80 200-mesh were almost identical for the North and South Pan samples (83.4% and 83.1%) for 72 hours of leach time. The cyanide and lime consumption at finer grind was much higher for North Pan samples than for South Pan samples.

13.2.8 Column Leach Tests

A total of 40 open-circuit column leach tests were performed on the three surface samples and twenty nine composite drill core samples. There are 16 additional column leach tests still underway, the majority of these on North Pan samples at a finer crush size. At least two column tests are run on each composite, and all columns at RDi are run in standard plexiglas columns of variable diameter. The feeds of P80 ½-inch, 1-inch, and 1½--inch are processed in 4-inch, 6-inch, and 8-inch diameter columns, respectively.

13.2.8.1 Assay-by-Size Fraction for Gold

Assay-by-size for gold was determined for the composite feed sample used for running the columns at P80 1½-inch crush size. Data from select composites is summarized in Table 13-10. The data indicate that the distribution of gold is generally proportional to weight for the North Pan samples, and that the gold tends to distribute preferentially in the finer sizes for the South Pan samples.

Table 13-10 Assay-by-Size Fraction Data

Assay-by-Size Fraction for Gold in Composite Samples												
Size Fraction (inches)	NP-1			SP-1			Composite No. 1			Composite No. 10		
	Assay g/t Au	Distribution %		Assay g/t Au	Distribution %		Assay g/t Au	Distribution %		Assay g/t Au	Distribution %	
		Wt.	Au		Wt.	Au		Wt.	Au		Wt.	Au
+1.5	1.00	16.8	30.7	0.16	17.1	6.9	1.94	10.4	15	0.9	5.8	4.3
1x7.5	0.49	30.5	27.3	0.15	16.5	6.2	1.02	26.2	19.6	0.66	31.2	17.1
0.75x1	0.38	16.3	11.4	0.18	10.5	4.8	1.3	19	18.1	0.69	14.9	8.5
0.5x0.75	0.45	11.6	9.5	0.18	7.2	3.2	1.32	20.6	20	0.82	17.2	11.6
-0.5	0.47	24.8	21.1	0.64	48.7	78.9	1.56	23.8	27.3	2.29	30.9	58.5
Cal. Feed	0.55			0.39			1.36			1.21		
Assay-by-Size Fraction for Gold in Composite Samples												
Size Fraction (inches)	13			16			19			24		
	Assay g/t Au	Distribution %		Assay g/t Au	Distribution %		Assay g/t Au	Distribution %		Assay g/t Au	Distribution %	
		Wt.	Au		Wt.	Au		Wt.	Au		Wt.	Au
+1.5	0.34	14.7	9.4	1.45	31.9	41.8	0.31	36.9	31.8	0.79	34	27.8
1x7.5	0.52	20.4	19.8	0.8	36.8	26.3	0.24	20.8	13.9	1.1	20.5	23.3
0.75x1	0.49	13	12	0.53	13.1	6.2	0.14	8.7	3.3	1.06	10.6	11.7
0.5x0.75	0.33	14.5	9	1.19	7.3	7.9	0.45	9.1	11.3	1.13	8.8	10.3
-0.5	0.71	37.5	49.8	1.83	10.8	17.8	0.58	24.5	39.8	0.99	26.1	26.9
Cal. Feed	0.54			1.11			0.36			0.96		

13.2.8.2 Test Results

Column leach test results for the North and South Pan samples are presented in Tables 13-11 and 13-12, respectively. The test data for all samples (including KCA samples) is averaged for each crush size (0.5, 1.0, and 1.5-inch) and for all columns. Test results indicate the following:

Gold extraction for North Pan samples was 63.6% in 75 days of leach time at P80 ½-inch, 78.5% in 61 days at P80 1-inch, and 60.8% in 86 days of leach time at P80 1½-inch crush size.

The gold extraction for all North Pan samples was 63.1% in 79 days of leach time. The NaCN consumption averaged 0.691 kg/t.

Gold extraction for South Pan samples was 85.6% in 54 days of leach time at P80 ½-inch crush size, 80.3% in 64 days of leach time at P80 1-inch crush size, and 86.2% in 60 days of leach time at P80 1½-inch crush size.

The gold extraction for all South Pan samples was 84.6% in 60 days of leach time. The NaCN consumption averaged 0.692 kg/t.

Table 13-11 Summary of Column Leach Test Results for North Pan Samples

Summary of Column Leach Test Results for North Pan Samples						
Composite No.	Crush Size P80 ins	Leach Time Days	Extraction % Au	Residue g/t Au	Cal. Head g/t Au	NaCN Consumption Kg/t
NP-1	1.5	41	52.4	0.309	0.649	0.154
NP-1	0.5	41	73.4	0.182	0.637	0.637
NP-2	0.5	41	73.1	0.394	1.462	0.873
NP-2	1.5	41	46.1	0.792	1.470	0.196
2	0.5	31	53.0	0.141	0.300	0.458
3	1.5	62	35.4	0.874	1.353	0.476
5	0.5	31	48.4	0.471	0.913	0.528
8	0.5	90	39.5	0.393	0.649	2.219
9	1.0	61	78.5	0.063	0.587	0.432
10	1.5	108	84.7	0.225	1.474	1.245
KCA32480	0.5	110	73.0	0.218	0.746	0.990
KCA32480	1.5	112	71.0	0.218	0.809	0.415
KCA32481	0.5	110	78.0	0.467	2.084	1.480
KCA32481	1.5	112	73.0	0.559	2.115	0.575
KCA32482	0.5	74	85.0	0.124	0.809	1.270
KCA32482	1.5	77	85.0	0.124	0.840	0.360
KCA32483	0.5	110	58.0	0.467	1.120	0.875
KCA32483	1.5	112	54.0	0.498	1.089	0.430
KCA32484	0.5	110	55.0	0.404	1.151	0.985
KCA32484	1.5	112	46.0	0.467	1.151	0.430
Average	0.5	75	63.6	0.362	0.987	0.810
Average	1.0	61	78.5	0.063	0.587	0.432
Average	1.5	86	60.8	0.452	1.216	0.476
Average	All	79	63.1	0.370	1.070	0.641

Table 13-12 Summary of Column Leach Test Results for South Pan Samples

Summary of Column Leach Test Results for South Pan Samples						
Composite No.	Crush Size P80 ins	Leach Time Days	Extraction % Au	Residue g/t Au	Cal. Head g/t Au	NaCN Consumption Kg/t
SP-1	0.5	41	95.7	0.015	0.352	0.628
11	0.5	31	74.3	0.125	0.487	0.509
11	1.0	66	77.8	0.204	0.918	0.729
12	0.5	62	86.5	0.069	0.513	1.058
13	1.5	62	95.5	0.039	0.860	0.416
14	0.5	62	91.2	0.024	0.274	1.058
14	1.5	60	91.3	0.031	0.356	0.444
15	0.5	62	85.2	0.026	0.352	0.764
15	1.5	60	95.2	0.026	0.537	0.454
16	0.5	31	85.0	0.098	0.655	0.493
16	1.0	68	83.8	0.158	0.945	0.878
16	1.5	60	90.8	0.091	0.994	0.674
17	0.5	62	86.3	0.072	0.526	0.880
17	1.5	69	79.2	0.082	0.395	0.641
18	1.0	61	87.5	0.120	0.961	0.437
18	0.5	68	75.1	0.192	0.772	1.378
19	0.5	60	92.8	0.034	0.471	0.853
19	1.5	69	92.4	0.043	0.568	0.467
20	1.0	61	54.2	0.398	0.870	0.790
21	1.0	61	85.8	0.098	0.688	0.574
22	0.5	60	75.8	0.149	0.616	0.974
23	1.5	62	76.1	0.370	1.551	0.445
24	0.5	62	83.2	0.171	1.015	0.695
25	1	66	78.7	0.110	0.517	0.764
25	1.5	69	76.8	0.177	0.764	0.503
26	1	66	94.7	0.031	0.588	0.705
27	0.5	62	94.5	0.031	0.565	0.651
27	1.5	69	78.4	0.209	0.967	0.502
28	0.5	62	98.7	0.022	1.752	0.849
29	0.5	31	74.1	0.117	0.451	0.547
Average	0.5	54	85.6	0.082	0.629	0.81
Average	1	64	80.3	0.16	0.783	0.697
Average	1.5	64	86.2	0.119	0.777	0.505
Average	All	60	84.6	0.111	0.709	0.692

13.2.8.3 Percent Slump

The height of ore in the column tests was measured before and after leaching. None of the columns showed much slump, indicating low probability of permeability problems in production heaps.

13.2.8.4 Drain Down and Maximum Percolation Rate

At the conclusion of leaching, all columns were allowed to drain as completely as possible. The columns were then rinsed for several days and monitored for free cyanide. When free cyanide could no longer be detected, the rinse was shut down and the columns were allowed to drain.

Percolation tests were conducted on the columns after leaching was completed. Each column was flooded to a level approximately 2 inches above the surface of the material, and the water flow rate adjusted to maintain that level. The amount of solution exiting the bottom of the column was measured to determine the flow rate following stabilization of the water level. Percolation test results are reported in Table 13-13.

Table 13-13 Percolation Test Results

Composite No.	Column Diameter, inches	Percolation Rate, liters/min		
		Liters/min	gpm/sq. ft.	Multiple of Application Rate
3	8	19.36	14.648	2930
9	6	2.362	3.178	636
12	4	4.892	14.806	2961
13	8	18.928	14.321	2864
14	4	0.195	0.590	118
15	4	0.36	1.090	218
17	4	4.936	14.939	2988
18	6	2.641	3.553	711
19	4	4.321	13.078	2616
20	6	1.946	2.618	524
21	6	3.601	4.845	969
23	8	18.475	13.978	2796
24	4	5.01	15.163	3033
27	4	5.052	15.291	3058
28	4	3.875	11.728	2346
25	6	2.835	3.814	763
8	4	2.878	8.711	1742
18	4	4.413	13.357	2671
16	6	2.572	3.460	692
16	8	18.076	13.676	2735
17	8	5.475	4.142	828
19	8	10.116	7.654	1531
25	8	3.063	2.317	463
27	8	5.872	4.443	889
10	8	18.475	13.978	2796
11	6	11.415	15.357	3071
26	6	2.612	3.514	703

13.2.8.5 Tailing Analysis

After completion of the percolation tests, the columns were allowed to drain for a period of 48 hours before being dumped and prepared for tailings analysis. A sample of air dried, crushed and split leached residue was wet- and dry- screened and assayed for gold by size fraction. Test results of the residue assay-by-size are summarized in Table 13-14.

Table 13-14 Residue Assay-by-Size Data

Distribution of Gold in Leach Residues by Size									
Size Fraction (inches)	Composite 10			Composite 24			Composite 27		
	Assay g/t Au	Distribution %		Assay g/t Au	Distribution %		Assay g/t Au	Distribution %	
		Wt.	Au		Wt.	Au		Wt.	Au
+1.5	0.11	16.0	11.6	0.04	18.4	11.6	0.13	24.9	18.7
1x1.5	0.15	42.0	42.7	0.07	35.5	42.6	0.17	22.6	21.7
0.75x1	0.14	16.2	14.9	0.05	12.3	10.6	0.12	3.7	2.4
0.5x0.75	0,15	13.3	13.4	0.08	8.8	10.7	0.10	5.8	3.2
-0.5	0.21	12.5	17.4	0.06	25.0	24.4	0.22	43.0	54.0
Cal. Feed	0.15			0.06			0.17		

13.2.8.6 Pregnant Solution Analysis

The pregnant solution from the leach column tests was analyzed during leaching to determine the quality of the solution. The results of the solution analysis are summarized in Table 13-15 A and B. Test results indicate that no problem-creating components were present in the pregnant solution during carbon loading.

Table 13-15 A and B, Pregnant Solution Analyses

Pregnant Solution Analyses for Surface Samples						
Element ppm	Column No.					
	NP-1		NP-2		SP-1	
	Days 2-6	Days 14-23	Days 2-6	Days 14-23	Days 2-6	Days 14-23
Au	0.27	0.05	0.7	0.09	0.43	0.01
Al	0.05	0.1	0.6	<0.1	0.2	<0.1
As	0.02	<0.1	0.5	0.8	0.1	0.5
Ba	0.4	<0.1	<0.1	<0.1	0.1	<0.1
Bi	<0.1	<0.1	0.6	<0.1	<0.1	<0.1
Ca	47	1.5	5	1.7	134	4
Cd	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Co	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Cr	0.1	<0.1	0.1	<0.1	0.2	<0.1
Cu	1.7	0.3	1.7	0.3	3.3	0.3
Fe	<0.1	<0.1	<0.1	0.1	<0.1	<0.1
K	14	3.9	7	2.9	4	2.6
Mg	<0.1	<0.1	<0.1	0.1	0.2	<0.1
Mn	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ni	<0.1	<0.1	0.1	<0.1	0.2	<0.1
Pb	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sr	1	0.1	0.3	0.1	1.5	0.2
Ti	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
V	0.1	<0.1	0.2	<0.1	<0.1	0.1
W	<0.1	0.1	<0.1	<0.1	<0.1	<0.1
Zn	0.9	<0.1	0.7	<0.1	4.9	0.2

Table 13-15 cont.

Pregnant Solution Analyses for 0.5-inch Column Tests												
Element ppm	2			11			12			10		
	Days			Days			Days			Days		
	1-5	16-25	29	1-5	16-25	29	2	19	43	1.5	19	43
Au	0.29	0.01	0.4	0.47	0.01		1.1	0.04	0.01	0.18	0.1	0.08
Al	1.2	0.4	0.1	0.2	0.1	0.1	0.9	0.6	0.5	0.8	0.4	0.1
As	0.3	<0.1	<0.1	0.2	0.5	0.7	<0.1	0.6	1.7	<0.1	0.1	0.2
Ba	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.1
Bi	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	6.1	<0.1
Ca	0.3	<0.1	118	<0.1	<0.1	<0.1	108	18.6	3.1	1.6	2.2	1.5
Cd	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1
Co	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Cr	0.1	<0.1	0.3	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1
Cu	2.5	0.3	9.4	<0.1	<0.1	1.9	0.4	0.2	<0.1	0.1	0.1	<0.1
Fe	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
K	17.3	2.5	3.4	2.6	<0.1	0.9	6.9	1.9	1.5	2.6	1.5	1.7
Mg	0.1	<0.1	<0.1	0.9	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	0.1
Mn	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ni	0.1	<0.1	<0.1	0.1	<0.1	<0.1	0.4	0.1	0.1	<0.1	<0.1	<0.1
Pb	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sr	0.3	<0.1	<0.1	1	<0.1	<0.1	2	0.3	0.2	<0.1	0.1	0.1
Ti	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
V	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.1	0.1	<0.1	<0.1	<0.1
W	0.5	<0.1	<0.1	<0.1	<0.1	<0.1	0.4	0.1	<0.1	<0.1	<0.1	<0.1
Zn	<0.1	<0.1	<0.1	0.4	<0.1	<0.1	23.4	5.7	0.1	<0.1	2.9	3.1

13.2.9 Coarse Ore Bottle Roll Leach Tests on North Pan Samples

Since the majority of the column tests were completed on South Pan samples, additional coarse ore bottle roll leach tests were performed on North Pan samples. These test results are summarized in Table 13-16. The results indicate that the average gold extraction for the seven samples at P80 ½-inch was 49.9% and at P80 ¼ -inch was 61.6%. The extraction for composite 2 at P80 ½-inch was 41.3% as compared to 53% in 31 days of leaching in the column test.

Table 13-16 Bottle Roll Cyanide Leach Test Results

Bottle Roll Cyanide Leach Test Results						
Composite	Crush Size P80 inches	Extraction % Au	Residue g/t Au	Cal. Head g/t Au	NaCN Consumption kg/t	Lime Addition kg/t
1	0.5	51.8	0.18	0.374	0.454	2.657
1	0.25	72.6	0.14	0.493	0.328	2.923
2	0.5	41.3	0.15	0.249	0.148	2.088
2	0.25	77.7	0.05	0.229	0.044	2.427
8	0.5	60.0	0.07	0.172	0.505	3.340
8	0.25	70.2	0.07	0.235	0.096	3.092
4	0.5	43.8	0.25	0.452	0.843	3.968
4	0.25	57.5	0.18	0.419	0.192	2.926
5	0.5	61.4	0.41	1.057	0.721	3.031
5	0.25	53.0	0.78	1.649	0.232	2.761
6	0.5	59.2	0.17	0.417	0.287	3.507
6	0.25	67.5	0.18	0.547	0.191	3.674
7	0.5	59.2	0.17	0.242	0.288	3.090
7	0.25	32.5	0.26	0.388	0.093	2.424
Average	0.5	49.9	0.20	0.423	0.463	3.100
Average	0.25	61.6	0.24	0.566	0.168	2.890
Average	All	55.8	0.22	0.495	0.316	3.000

13.2.10 Agglomeration Tests

Agglomeration tests were conducted on three ore types to determine if agglomeration of the material is required. A series of five tests were run on each ore type with varied levels of cement addition, including a blank with no cement addition. The agglomeration test results are reported in Table 13-17. The Sbs test was completed on ½-inch crushed material while the SbA and ShA tests were completed on 1-inch crushed material. The agglomeration test procedure was carried out according to the following steps:

1. A 1 kilogram charge of material was placed in a 4,000 ml beaker with the correct amount of lime and cement. The sample was then mixed thoroughly by rotating the beaker.

2. Tap water was then sprayed onto the material as the beaker was rotated to agglomerate the sample. The weight of the water used was recorded once the fines agglomerated and were no longer loose.

3. The material was then place in a sealed bag and allowed to cure for 36 hours.

4. After 36 hours the cured material was placed in a 10 mesh screen and submerged in a bucket of water. The screen was submerged in the bucket of water 10 times, with a constant rhythmic motion. The +10 mesh material was then dried and weighed to determine the percentage of material that was retained.

Table 13-17 Agglomeration Test Results

Agglomeration Test Results						
Test No.	**Composite No.**	**Size 1 kg, inch**	**Lime Rate, lb/ton**	**Cement Rate, lb/ton**	**% Retained (10-mesh)**	**% Moisture After Agglomeration**
1	SbS	1/2	0	0	93.5	3.9
2	SbS	1/2	2	2.5	98.1	4.6
3	SbS	1/2	2	5	97.1	5.3
4	SbS	1/2	2	7.5	97.5	5.4
5	SbS	1/2	2	10	97.1	5.6
6	SbA	1	0	0	90.1	6.4
7	SbA	1	2	2.5	94.1	6.9
8	SbA	1	2	5	96.7	7.4
9	SbA	1	2	7.5	93.6	7.5
10	SbA	1	2	10	93.7	7.9
11	ShA	1	0	0	95.6	4.5
12	ShA	1	2	2.5	95.0	5.3
13	ShA	1	2	5	96.0	5.4
14	ShA	1	2	7.5	96.5	5.7
15	ShA	1	2	10	97.4	5.8

13.2.11 Carbon Loading Tests

Pregnant solution from one of the column tests was used to conduct a preliminary carbon load test. The objective was to determine the ratios of gold to silver on the loaded carbon. A 20 gram carbon sample was reacted with 1 liter of pregnant solution for 4 hours in a bottle roll, and a portion of the carbon was then analyzed for Au and Ag. The carbon assayed 99.36 g/t Au and 2 g/t Ag, for an Au/Ag ratio of 50:1.

13.2.12 Metallurgical Testing Conclusions

The composite samples assayed 0.23 g/t to 2.153 g/t Au and 0.56 g/t to 5.63 g/t Hg, and did not exhibit preg-robbing properties. The major host rock mineral is quartz; the ore is competent with a low clay mineral content. The South Pan samples have low crushability work index compared to North Pan samples, and abrasion index values indicate that the ore is non-abrasive. Static leach tests and bottle roll tests indicate that South Pan samples leach quickly and at relatively coarse size. North Pan samples are size dependent and need finer crush to obtain reasonable recoveries.

Average gold extraction in a leach time of 79 days was slightly higher for South Pan samples than for North Pan samples, as was NaCN consumption. Permeability issues are not anticipated based on the results of slump tests, and pregnant solution analyses indicate low probability of problems with carbon loading. The gold recoveries for the commercial operation are projected to be 85% for South Pan and 65% for North Pan

14 MINERAL RESOURCE ESTIMATES

The updated mineral resource estimate reported for the Pan project as of September 1, 2011, was completed by Zachary J. Black, E.I.T., Gustavson Staff Geological Engineer, under the supervision of Terre Lane, Associate Principal Mining Engineer and Donald E. Hulse, P.E., VP. This mineral resource estimate is compliant with NI 43-101 and CIM Definition Standards.

14.1 Data Used for the Gold Grade Estimation

Gustavson created a 3 dimensional block model for estimating mineral resources at the Pan Project from data provided by MIDWAY. Drill hole data including collar coordinates, MIDWAY surveys, sample assay intervals, and geologic logs were provided in a secure Microsoft Access database. Geology surface maps and cross-sections detailing alteration and lithology were also provided in electronic format.

The present database has been updated to include the additional 33 reverse circulation drill holes completed in 2011 by MIDWAY in Central and South Pan. Four drill holes (PR-53, PN08-15, PN08-16, and PN10-12C) were removed from the database because the collar coordinates could not be validated or because the holes were abandoned.

The Pan drill hole database contains gold assay analytical information on 53,992 sample intervals, with assay results by fire assay and cyanide digestion stored separately. As a subset of this total database, 43,617 samples contain AuFA assay data, and 18,403 contain AuCN assay data. Of the AuCN data, 8,028 are paired with AuFA assay results, providing an indication of associated gold recovery, though at a very fine grind. AuCN data only is available for another 10,375 samples.

Samples without a total gold assay are generally associated with the Amselco and Alta Bay datasets, and for the Alta Bay material data is limited to values below 0.012 ozAu/st on the AuCN determination. In the 2005 MDA report, comparative analysis of AuFA and AuCN data indicates that AuCN analyses are potentially 24% lower than AuFa depending on cyanide solubility of contained gold. All assays below detection limits were set to 0.000 oz/ton, and missing samples were not assigned any value and were not used in the estimation.

14.2 Density

MIDWAY performed density tests on 194 diamond core samples from both North and South Pan. The test procedure included weighing of the core sample in air, weighing the sample in water, and use of the following calculation:

A = mass of dry specimen in air,

B = mass of specimen in water,

$$\gamma = \left(\frac{A}{B}\right) * 0.9970 \frac{g}{cm^3}$$

The results are summarized in Table 14-1.

Table 14-1 Core Sample Density Test Results

Rock Type	Density t/ft^3	Tonnage Factor ft^3/ton
Argillic Shale	0.0685	14.6
Unaltered Shale	0.0704	14.2
Limestone	0.0781	12.8
Breccia	0.0794	12.6
Argillic Breccia	0.0758	13.2
Silicified Breccia	0.0763	13.1
Tertiary Volcanics	0.0592	16.9

14.3 Methodology

Gustavson modeled and estimated the mineral resources by constructing geologic, alteration, and mineral domains from the MIDWAY cross sections, and geostatistically analyzing the drill data to define the estimation parameters used to estimate gold grades into the 3-Dimensional (3D) block model. Leapfrog 3D® geological modeling software was used to create 3D stratigraphic, alteration and mineral domain solids. MicroModel mining software was used to estimate gold grades.

MIDWAY defined the structure, stratigraphy, and alteration of the North and South Pan areas of property on 1 in. = 50 ft cross sections spaced 200 ft apart and oriented east-west, to best account for orientation of the deposit. Gustavson combined the MIDWAY subsurface interpretations with the surface geology to create 3D stratigraphic and alteration models.

Gustavson visually evaluated the assay data on cross-section, and found that while the majority of the mineralization was restricted to the dissolution/hydrothermal breccia there was related contact mineralization in other lithologic domains. Gustavson found that a +0.004 opt grade population represented a continuous zone of mineralization related to the argillic alteration,

stratigraphic ore zones, and the breccia zone. A higher grade + 0.008 opt grade population represented a continuous zone of higher-grade material possibly related to silica flooding within the breccia zone. Grade breaks were added at + 0.002 and + 0.006 opt in order to better model the gradational boundaries of the stratigraphically controlled areas. These grade breaks were used to construct grade domain boundaries representative of the lithology, alteration, and grade of the zone being modeled. The grade domains were used as both soft and hard boundaries designed to replicate the gradational changes identified in the drill hole assay data.

14.4 Estimation Domains

In order to accommodate statistical search parameters appropriate for individual mineralization styles and structural orientations, the block model was divided into several domains. Domains were delineated based on distinguishing characteristics of one or several target areas grouped together. The three zones of the project area, North, Central, and South Pan, were the starting demarcations for building the domains. Each of these zones was then divided into a domain based on the individual characteristics of the area (Figure 14-1).

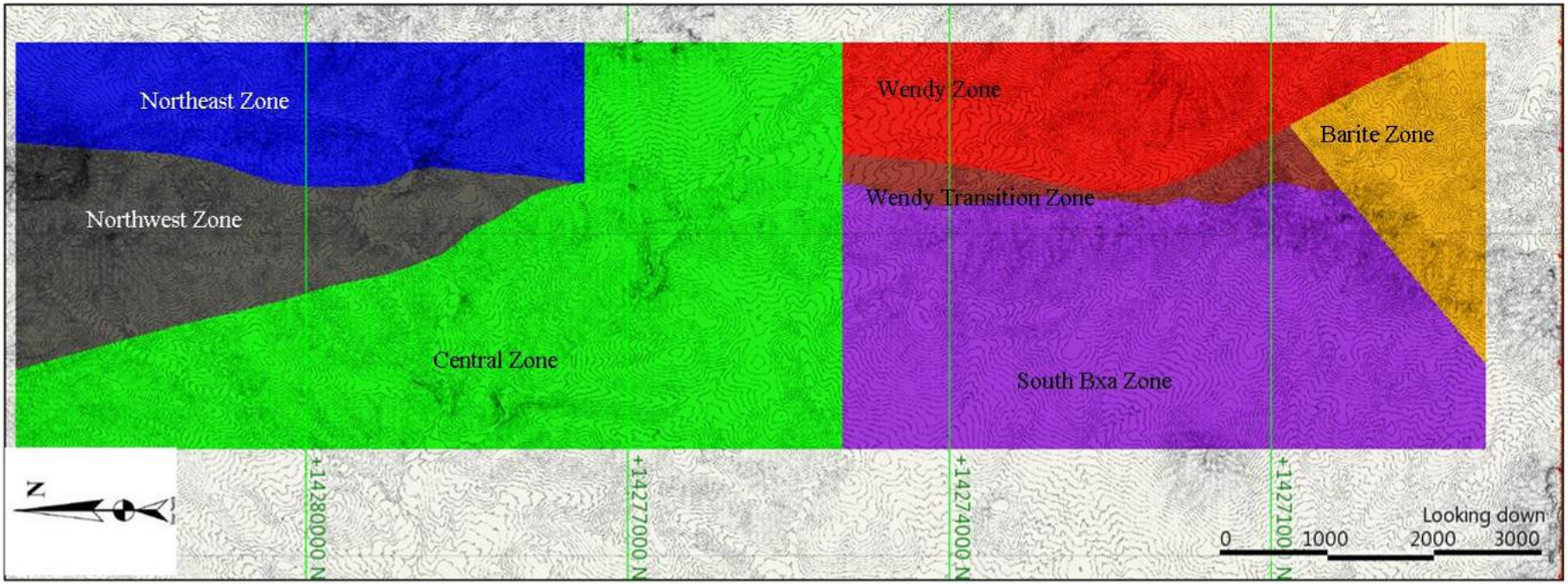


Figure 14-1 Estimation Domains

14.4.1 Creation of Domains

14.4.1.1 North Pan

The northeast portion of the North Pan zone was delineated as its own domain, the Northeast domain. This domain is dominated by a structurally controlled solution collapse breccia that occurs adjacent to the Pan fault, and is oriented near-vertically.

The northwest portion of the North Pan zone was delineated as the Northwest domain. Mineralization in these areas is more sub-horizontal and is controlled by alteration along the Pilot Shale- Devils Gate Limestone.

14.4.1.2 Central Pan

The entire Central Pan zone was included in the Central domain. Each of the individual target areas in this zone, namely Black Stallion and Syncline, are characterized by sub-horizontal mineralization along the Pilot Shale- Devils Gate Limestone contact.

14.4.1.3 South Pan

The portion of South Pan adjacent to the Pan fault that contains the South Breccia target area was delineated as the South Breccia domain. This domain is dominated by a structurally controlled solution collapse breccia and is oriented near-vertically.

The portion of the South Pan zone east of the South Breccia domain was delineated as the Wendy Transition domain. It contains characteristics of the vertical, structurally-controlled South Breccia target area and the easterly dipping, stratigraphically dominated Wendy target area. The data in this domain did not fall cleanly into either target area and was thus assigned as a transitional domain.

The portion of the South Pan zone east of the Wendy Transition domain that contains the Wendy target area was designated the Wendy domain. The Wendy target area was delineated as a separate domain due to dominant stratigraphically controlled mineralization along the Pilot Shale- Devils Gate Limestone contact. The mineralization also has an easterly dip that distinguishes it and warranted a custom search ellipse to better fit the data.

The portion of South Pan south of the South Breccia domain that contains the Barite target area was designated as the Barite domain. This domain is characterized by the same near-vertical, structural dissolution breccia dominated mineralization as the South Breccia domain, but here the breccia arcs to the southeast. The change in strike of the breccia warranted a delineated domain to better align the search ellipse along strike (Figure 14-2).

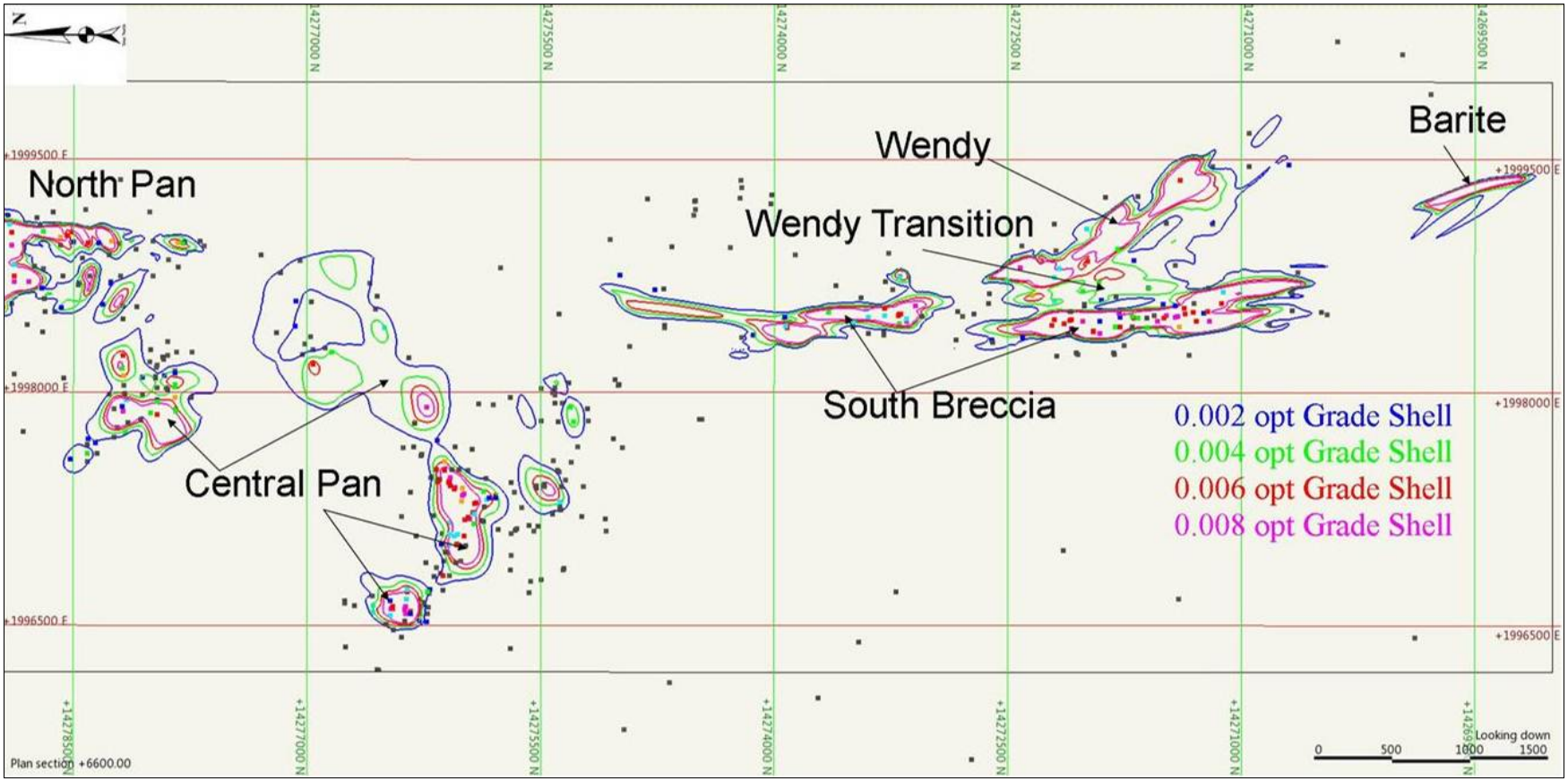


Figure 14-2 South and Central Pan Grade Shells at Bench 6600

14.4.2 Grade Shell Estimation

Each domain in the North Pan zone consists of two grade boundaries representing 0.004 and 0.008 opt, and each domain in the Central and South Pan zones consists of four grade boundaries representing 0.002, 0.004, 0.006 and 0.008 opt gold assays.

There are potential bias problems with cyanide solution assays appearing lower than the corresponding fire assays. Cyanide solution samples were used to estimate data outside of the interpreted mineralized zones in order to limit their effect on the overall grade of the resource model, as they can be up to 24% lower than the corresponding fire assay. In the North Pan zone this was done by limiting the use of the AuCN data to the inferred resource estimation. In the Central and South Pan zones this was done by estimating the blocks outside of the + 0.004 opt grade shell using both fire assay and cyanide assay data.

14.4.2.1 North Pan

No additional drilling has been completed in the North Pan zone, and the resource estimate published in the Pan Gold Project Pre-Feasibility Study NI 43-101 Technical Report dated April 4th, 2011 is still valid and was used for this report. The previous North Pan resource estimate included a limited portion of the Syncline target area, which has been reallocated to the Central Pan zone. The Northeast and Northwest domain estimates are not impacted by the addition of the Central Pan zone to the resource.

14.4.2.2 Central and South Pan

This updated resource estimate is based in part on additional data from 33 new reverse circulation drill holes in the South Pan zone, and newly interpreted geology of the Central Pan zone. The two separate block models used in the previous resource estimate were extended and combined across Central Pan to create a single coherent block model for use in the current estimate. Grade boundaries in the Central and South Pan domains were estimated at 0.002, 0.004, 0.006 and 0.008 opt gold assay values. The estimation below the 0.004 opt was done using all available assay data (both AuFA and AuCN), while those at + 0.004, + 0.006, and + 0.008 utilize only the AuFA data.

The grade boundary solids were used to code the block model and drill hole assays to the domains. Blocks codes were restricted to the grade boundaries on either side of that being estimated, i.e. blocks within the 0.004 grade boundary used the closest samples from within the + 0.002, + 0.004, and + 0.006 boundary for grade estimation. Summary statistics of the coded drill hole samples are presented in Table 14-2. Statistically the Barite zone is not differentiated from the South Breccia Zone as it is the same style mineralization with a different orientation.

Table 14-2 Pan Project Raw Assay Summary Statistics Au ≥ 0.001 opt

South and Central Pan Sample Assay Summary Statistics Au ≥ 0.001 opt					
Mineral Domain	Sample Count	Maximum	Mean	Median	Variance
	n	opt	opt	opt	opt
Central	2277	0.015	0.001	0.000	0.000
Central 0.002	1018	0.026	0.002	0.001	0.000
Central 0.004	614	0.049	0.004	0.002	0.005
Central 0.006	444	0.067	0.006	0.003	0.007
Central 0.008	1190	0.171	0.017	0.011	0.020
South Pan Bxa	1469	0.010	0.001	0.001	0.000
South Pan Breccia 0.002	944	0.032	0.003	0.002	0.000
South Pan Breccia 0.004	473	0.053	0.005	0.004	0.000
South Pan Breccia 0.006	575	0.048	0.007	0.005	0.000
South Pan Breccia 0.008	4011	0.254	0.022	0.016	0.000
Wendy Transition	814	0.015	0.001	0.001	0.000
Wendy Transition 0.002	537	0.032	0.003	0.002	0.000
Wendy Transition 0.004	178	0.052	0.005	0.003	0.000
Wendy Transition 0.006	104	0.031	0.006	0.004	0.000
Wendy Transition 0.008	769	0.292	0.018	0.011	0.001
Wendy	1311	0.010	0.001	0.000	0.000
Wendy Zone 0.002	540	0.022	0.003	0.002	0.000
Wendy Zone 0.004	392	0.028	0.005	0.004	0.000
Wendy Zone 0.006	331	0.035	0.007	0.005	0.000
Wendy Zone 0.008	769	0.292	0.018	0.011	0.001

14.5 Compositing

Twenty-foot downhole composites were created from the gold assays and confined to each of the domain solids and grade shells. The composites were then used for the grade capping analysis and variography for each domain solid. Table 14-3 presents the composite data for each domain.

Table 14-3 Domain Composite Data

South and Central Pan Composite Assay Summary Statistics Au ≥ 0.001 opt					
Mineral Domain	Sample Count	Maximum	Mean	Median	Variance
	n	opt	opt	opt	opt
Central	624	0.008	0.001	0.001	0.000
Central 0.002	270	0.012	0.002	0.002	0.000
Central 0.004	164	0.015	0.004	0.003	0.000
Central 0.006	113	0.019	0.006	0.005	0.000
Central 0.008	310	0.152	0.017	0.013	0.000
South Pan Breccia	464	0.004	0.001	0.001	0.000
South Pan Breccia 0.002	282	0.020	0.003	0.002	0.000
South Pan Breccia 0.004	115	0.038	0.005	0.004	0.000
South Pan Breccia 0.006	150	0.025	0.007	0.006	0.000
South Pan Breccia 0.008	1046	0.017	0.021	0.018	0.000
Wendy Transition	346	0.004	0.001	0.000	0.000
Wendy Transition 0.002	148	0.011	0.003	0.003	0.000
Wendy Transition 0.004	97	0.010	0.005	0.004	0.000
Wendy Transition 0.006	85	0.018	0.006	0.006	0.000
Wendy Transition 0.008	196	0.210	0.018	0.013	0.000
Wendy	225	0.005	0.001	0.001	0.000
Wendy Zone 0.002	144	0.010	0.002	0.002	0.000
Wendy Zone 0.004	42	0.018	0.005	0.004	0.000
Wendy Zone 0.006	28	0.027	0.007	0.006	0.000
Wendy Zone 0.008	39	0.078	0.018	0.015	0.000

14.6 Capping of Assays

The following paragraphs summarize information reported by MIDWAY (2009) and independently verified by Gustavson during the Prefeasibility Study.

Cumulative probability plots were created for 10-foot, 20-foot and 50-foot composites. These plots were completed for each domain and for all of the composites within all zones together.

Analysis showed no significant influence of higher-grade samples to the final estimate of grade or tonnage of the deposit.

A similar result was obtained by an analysis that AMEC completed for an internal resource estimate of the Pan deposit (AMEC, May 9, 2008). This analysis was based upon a metal-at-risk Monte Carlo Simulation. For this simulation, two probability distributions are created, each representing the real distribution of the high grade and nominal grades of the deposit. The simulation creates drill hole results for thousands of samples based upon each of the distributions. It then uses the results to estimate a tonnage to be mined from both of the populations on a yearly basis. Based on the results of this analysis, AMEC concluded that less then 1.7% of the metal in the deposit is at risk and that capping of the Pan deposit was not warranted.

Based on the analyses completed by MIDWAY and by AMEC, no capping was applied to the Pan assay data or composites.

Gustavson generated cumulative frequency plots for each of the newly defined domains to evaluate capping with the additional drilling samples from the 2010 and 2011 drilling programs. No evidence of extreme high grade outliers was found in the analysis, and no capping was applied to the samples or composites used in the resource estimation.

14.7 Variography

Variography analysis was completed for all seven estimation domains to establish the spatial variability of mineralization within each domain. Variography establishes the appropriate contribution that any specific composite should have when estimating a block volume value within a model. This is performed by comparing the orientation and distance used in the estimation to the variability of other samples of similar relative direction and distance. An example of a spherical variogram constructed from the major axis of the South Pan Breccia domain using a “Pairwise Relative” method of organizing of the variance pairs is shown in Figure 14-3.

Variograms were created for both horizontal and vertical orientations within each domain increment of 15° between orientations. Search ellipsoid axis orientations were based on the results of that analysis. The sill and nugget values for each domain were taken from the omni-directional variograms. The resultant variogram parameters are shown in Table 14-4.

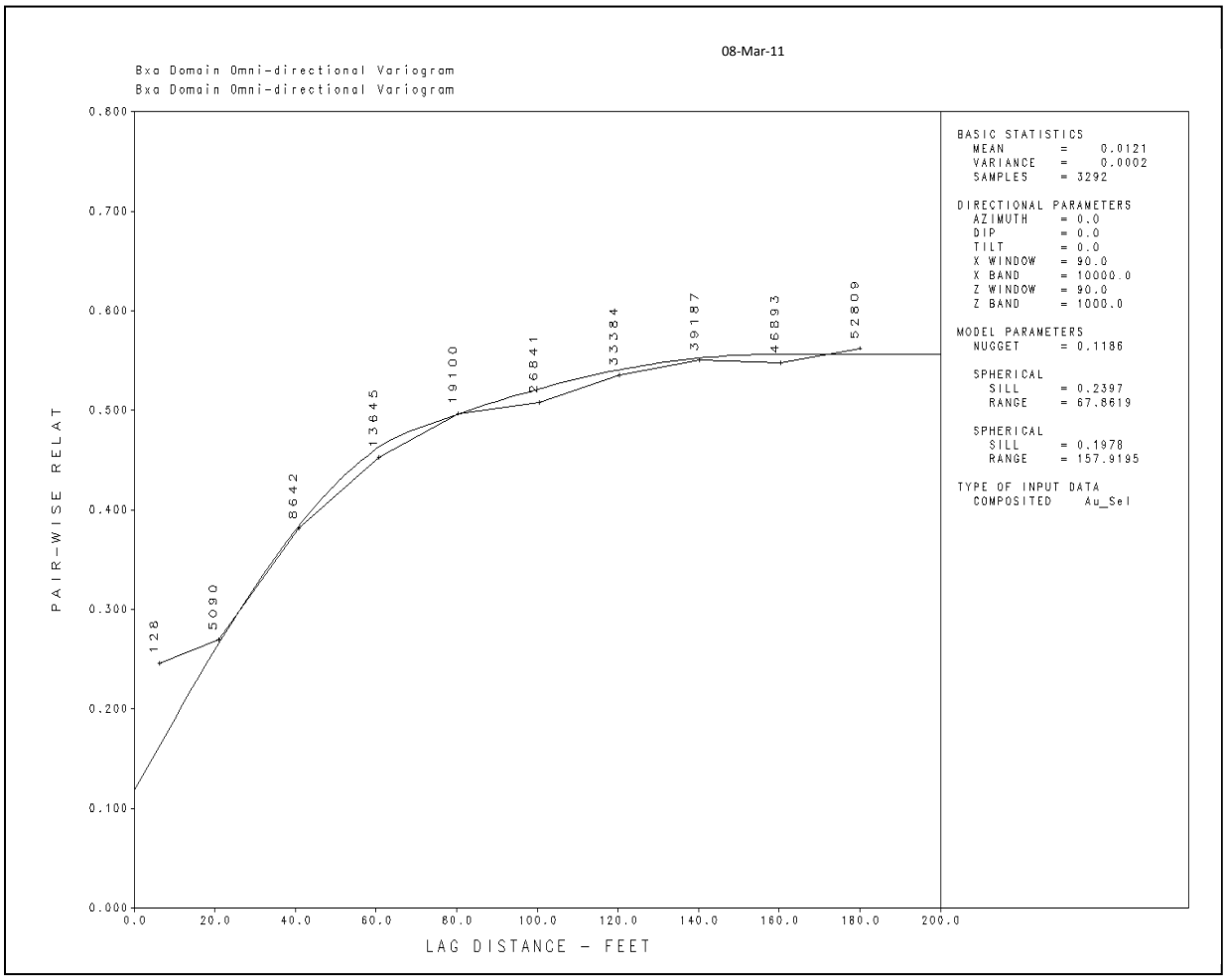


Figure 14-3 A Spherical Variogram for the Major Axis the South Pan Breccia Domain

Table 14-4 Pan Variogram Parameters

Primary Axis							
	North Breccia	**North West**	**Central**	**South Breccia**	**Wendy Transition**	**Wendy**	**Barite**
Strike	Isotropic	255	255	0	350	323	340
Plunge		0	0	-10	5	0	10
Secondary Axis							
Dip Direction	Isotropic	345	345	270	260	53	250
Dip		0	0	-85	-85	-63	-85
Model Type	Spherical	Spherical	Spherical	Spherical	Spherical	Spherical	Spherical
C0	0.213	0.212	0.391	0.303	0.262	0.419	0.303
C1	0.431	0.414	0.609	0.425	0.372	0.452	0.425
C2	0.356	0.374	---	0.272	0.366	0.130	0.272
Range1	68	100	192	72	50	60	72
Range2	158	174	---	210	130	160	210

14.8 Estimation Methodology

A Block model was created for the Pan deposit using blocks that are 20 feet wide, 20 feet long and 20 feet high. Each of the blocks was assigned attributes of gold grade, resource classification, rock density, tonnage factor, lithology, alteration, and a grade domain classification. The blocks were then assigned densities and domain assignments as appropriate to assist in estimation.

14.8.1 North Pan

All of the domains were estimated in 3 passes and each block was assigned a classification of measured, indicated, or inferred based on the parameters in Table 14-4. The resource classification of each block was based on a factor of the average sample distance in an anisotropic direction as established by the second structure range (Table 14-3) from the variogram model for the domain being estimated. The measured class utilized a ½ ellipsoid variogram search distance. Indicated was set at a full variogram search distance and inferred was set at 2 times the variogram distance. As an additional requirement, Gustavson limited the measured and indicated estimation data to include only the fire assay intervals. Inferred resource was estimated using all available assay data.

14.8.2 Central and South Pan

All of the domains were estimated by using large search ellipses oriented in the direction of maximum continuity to provide an estimation of the gold grade within every block inside of the grade shells. The resource classification of each block was based on a factor of the closest sample distance in an anisotropic direction as established by the second structure range (Table 14-3) from the variogram model for the domain being estimated. The measured class utilized a ½ ellipsoid variogram search distance. Indicated was set at a full variogram search distance and inferred was set at 2 times the variogram distance. Each domain was estimated using a minimum of 5 composites with no more than 4 composites from a single drill hole. A maximum of 12 composites was allowed to better represent the local variability.

Ordinary Kriging was used to estimate grade for all domains. Estimation parameters for each of the domains are given in Tables 14-5 through 14-7

Table 14-5 Pan Estimation Parameters

Domain	North Breccia			North West		
# of composites	Measured	Indicated	Inferred	Measured	Indicated	Inferred
	1st Pass	2nd Pass	3rd Pass	1st Pass	2nd Pass	3rd Pass
Min	3	3	2	3	3	2
Max	8	12	12	8	12	12
Max per Hole	2	2	4	2	2	4
Search Ellipsoid Distance (feet)						
Primary	79	158	316	87	174	348
Secondary	79	158	316	45	90	180
Tertiary	79	158	316	30	60	120

Table 14-6 Pan Estimation Parameters

Domain	South Breccia			Wendy Transition			Wendy		
# of Composites									
Min	5			5			5		
Max	12			12			12		
Max per Hole	4			4			4		
Search Ellipsoid Distance (feet)									
	Measured	Indicated	Inferred	Measured	Indicated	Inferred	Measured	Indicated	Inferred
Primary	105	210	420	65	130	260	80	160	320
Secondary	90	180	360	47	94	188	62	124	248
Tertiary	23	46	92	22	44	88	62	124	248

Table 14-7 Pan Estimation Parameters

Domain	Barite			Central		
Min	5			5		
Max	12			12		
Max per Hole	4			4		
Search Ellipsoid Distance (feet)						
	Measured	Indicated	Inferred	Measured	Indicated	Inferred
Primary	105	210	420	96	192	384
Secondary	90	180	360	66	132	264
Tertiary	23	46	92	65	130	260

14.9 Estimate Validation

The model was validated by examining the blocks with actual drill hole assay data to determine if the estimated blocks fit the geologic parameters of the various domains of the deposit. Both assay and geological constraints were visually examined. A bench plan at an elevation 6600 feet displaying the block model gold content with the composite gold data and grade shells is presented in Figure 14-4.

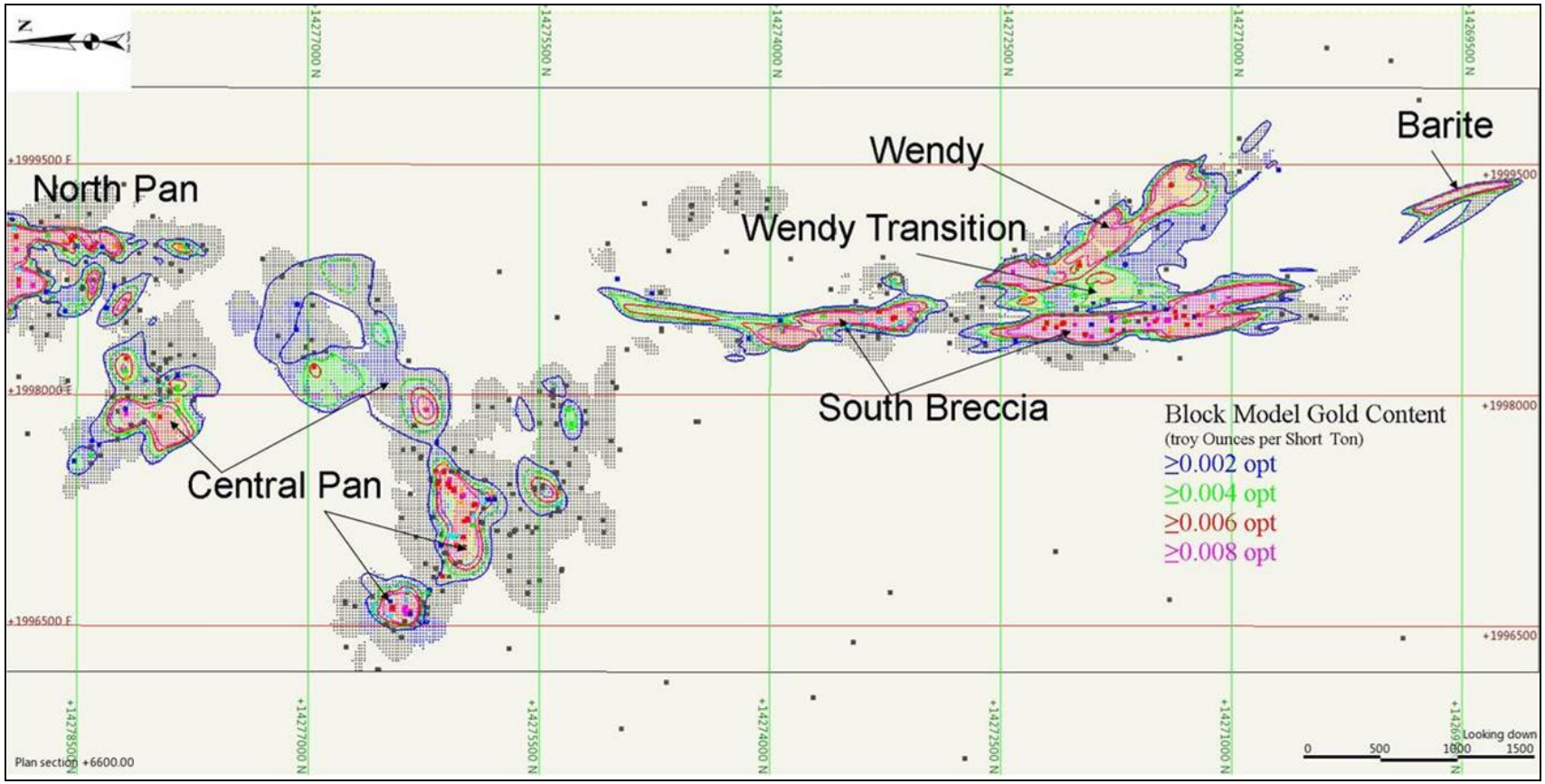


Figure 14-4 Block Model Gold Content of Bench Elevation 6600

14.10 Mineral Resource Classification

The mineral resources at Pan are classified as measured, indicated, and inferred in accordance with CIM Definition Standards for Mineral Resources and Mineral Reserves.

14.11 Mineral Resource Tabulation

The mineral resource estimate is summarized in Tables 14-8 through 14-11. This mineral resource estimate includes all drill data obtained as of September 1, 2011 and has been independently verified by Gustavson.

Table 14-8 North Pan Mineral Resource

North Pan Measured Resource			
Opt	**Tons**	**Au Opt**	**oz**
0.008	13,994,415	0.0168	234,844
0.006	15,592,007	0.0158	245,850
0.004	**18,597,319**	**0.0140**	**260,404**
North Pan Indicated Resource			
0.008	10,565,126	0.0146	154,540
0.006	12,702,959	0.0133	169,135
0.004	**17,006,845**	**0.0112**	**189,823**
North Pan Measured plus Indicated Resource			
0.008	24,559,541	0.0159	389,384
0.006	28,294,966	0.0147	414,985
0.004	**35,604,164**	**0.0126**	**450,228**
North Pan Inferred Resource			
0.008	122,858	0.0112	1,376
0.006	233,476	0.0091	2,129
0.004	511,402	0.0067	3,427

Table 14-9 Central Pan Mineral Resource

Central Pan Measured Resource			
Opt	**Tons**	**Au Opt**	**oz**
0.008	2,329,227	0.0146	33,991
0.006	2,837,448	0.0132	37,482
0.004	**3,802,537**	**0.0111**	**42,192**
Central Pan Indicated Resource			
0.008	1,895,266	0.0122	23,216
0.006	2,524,520	0.0109	27,623
0.004	**4,053,056**	**0.0086**	**34,885**
Central Pan Measured plus Indicated Resource			
0.008	4,224,493	0.0135	57,207
0.006	5,361,968	0.0121	65,105
0.004	**7,855,593**	**0.0098**	**77,077**
Central Pan Inferred Resource			
0.008	240,912	0.0103	2,470
0.006	290,465	0.0096	2,802
0.004	722,079	0.0066	4,741

Table 14-10 South Pan Mineral Resource

South Pan Measured Resource			
Opt	**Tons**	**Au Opt**	**oz**
0.008	13,826,998	0.0182	251,350
0.006	15,584,480	0.0169	263,423
0.004	**18,297,337**	**0.0151**	**276,641**
South Pan Indicated Resource			
0.008	17,440,794	0.0158	275,596
0.006	20,764,856	0.0144	298,599
0.004	**26,469,130**	**0.0123**	**325,863**
South Pan Measured plus Indicated Resource			
0.008	31,267,792	0.0169	526,946
0.006	36,349,336	0.0155	562,022
0.004	**44,766,467**	**0.0135**	**602,504**
South Pan Inferred Resource			
0.008	1,588,716	0.0184	29,274
0.006	1,933,540	0.0164	31,651
0.004	3,096,599	0.0120	37,093

Table 14-11 Total Pan Mineral Resource

Pan Total Measured Resource			
Opt	**Tons**	**Au Opt**	**oz**
0.008	30,150,640	0.0173	520,186
0.006	34,013,935	0.0161	546,756
0.004	**40,697,193**	**0.0142**	**579,238**
Pan Total Indicated Resource			
0.008	29,901,186	0.0152	453,351
0.006	35,992,335	0.0138	495,357
0.004	**47,529,031**	**0.0116**	**550,571**
Pan Total Measured plus Indicated Resource			
0.008	60,051,826	0.0162	973,537
0.006	70,006,270	0.0149	1,042,112
0.004	**88,226,224**	**0.0128**	**1,129,809**
Pan Total Inferred Resource			
0.008	1,952,486	0.0170	33,120
0.006	2,457,481	0.0149	36,581
0.004	4,330,080	0.0105	45,261

15 MINERAL RESERVE ESTIMATES

The February 2011 Prefeasibility Study demonstrated that the Pan Project is economically viable, and this Feasibility Study has strengthened that conclusion. Based on the results of the Feasibility Study, Measured and Indicated Mineral Reserves within the designed pits are considered Proven and Probable Reserves according to CIM Definition Standards. The final reserves are reported using a 0.008 Au opt cutoff for the North and Central pits, and a 0.006 Au opt cutoff for the South pit. Cutoffs were chosen to maximize the NPV of the project and do not necessarily represent the minimum economic cutoff. Pit designs are based on geologic criteria provided in the April 2011 Pit Slope Evaluation report produced by Golder Associates. Geologic solids created for each lithological unit were used as a guide during the pit design process. The limestone units were designed with a 50° inter-ramp wall angle assuming pre-split blasting in these units; all other lithological units were designed with a 45° inter-ramp wall angle.

15.1.1 Whittle Pit Optimization

Gustavson generated a series of optimization shells on the South and North resource blocks ranging from $236/oz to $2360/oz. Forty six shells were generated separately on the North and South resource areas using a gold price of $1180/oz. Heap leach recoveries of 65% and 85% for North and South Pan, respectively, were used in the optimization runs. The general parameters were based upon preliminary estimates of operating cost and incorporated recommendations from Golder's April 2011 geotechnical report. Mining costs were estimated to be $1.09/ton of material moved for the pit optimization. Crushing agglomeration, leaching, general and administration and gold recovery costs were estimated at $3.71/ton of ore. Only Measured and Indicated Resources were considered in the evaluation, Inferred resources were treated as waste.

15.1.2 Calculation Parameters

The series of pit optimizations were graphed and evaluated to compare cash flows, net present values (NPV's) and internal rates of return (IRR's). The final South pit and the North pit optimizations are based on shells at a gold price less than the average price of $1180/oz in order to achieve a higher NPV and overall lower cash cost per ounce. The option of mining the entire South Pan pit before the North Pan pit was evaluated during the scheduling process. Although the South Pan pit has a 20% higher recovery factor, mining the South Pan in phases results in a higher IRR by delaying the high strip of the Phase 2 South Pit until the end of the mine life. The option of mining the North pit first was also evaluated, but the higher recovery from the South Pan pit (85%, compared to 65% from North Pan) and shorter estimated leach times render the South pit the more favorable option to mine first.

15.1.2.1 Cutoff Grade Equations

The mineral reserve estimate for the Pan Project is based on designed open pits with maximized revenues at an average gold price of $1180 per ounce. Cutoff grades of 0.006 Au opt (0.21 gpt)

in the South pit and 0.008 Au opt (0.27 gpt) in the North and Central pits provide the highest NPV for the project. Table 15-1 shows the calculated cutoffs based on the three year trailing average gold price ($1,200/oz) and projected operating costs. The chosen cutoffs which are fairly close to the economic cutoffs produce the best economics results for NPV, IRR and cash cost per ounce.

Table 15-1 Calculated Cutoffs

North Pit							
Economic Cutoff @		**$ 1,200**		**Mining Cuttoff @**		$ 850	**$ 1,200**
Cost Center				**Cost Center**			
Mining	$/ore ton	**$ 2.78**		Mining	$/ore ton	$ -	**$ -**
Processing	$/ore ton	**$ 2.58**		Processing	$/ore ton	$ 2.65	**$ 2.58**
G&A	$/ore ton	**$ 0.37**		G&A	$/ore ton	$ 0.38	**$ 0.37**
Recoveries	ton	**65%**		Recoveries	ton	70%	**65%**
Royalties	gross	**4%**		Royalties	gross	4%	**4%**
refining cost	per/oz	**$ 5.00**		refining cost	per/oz	$ 5.00	**$ 5.00**
total cost	ore/ton	**$ 5.73**		total cost	ore/ton	$ 3.03	**$ 2.95**
Gold Selling Price	oz	**$ 1,200**		Gold Selling Price	oz	$ 850	**$ 1,200**
Cutoff Grade	opt	**0.0074**		**Cutoff Grade**	opt	0.0051	**0.0038**
South Pit							
Economic Cutoff @		**$ 1,200**		**Mining Cuttoff @**		$ 850	**$ 1,200**
Cost Center				**Cost Center**			
Mining	$/ore ton	**$ 2.78**		Mining	$/ore ton	$ -	**$ -**
Processing	$/ore ton	**$ 2.58**		Processing	$/ore ton	$ 2.65	**$ 2.58**
G&A	$/ore ton	**$ 0.37**		G&A	$/ore ton	$ 0.38	**$ 0.37**
Recoveries	ton	**85%**		Recoveries	ton	80%	**85%**
Royalties	gross	**4%**		Royalties	gross	4%	**4%**
refining cost	per/oz	**$ 5.00**		refining cost	per/oz	$ 5.00	**$ 5.00**
total cost	ore/ton	**$ 5.73**		total cost	ore/ton	$ 3.03	**$ 2.95**
Gold Selling Price	oz	**$ 1,200**		Gold Selling Price	oz	$ 850	**$ 1,200**
Cutoff Grade	opt	**0.0056**		**Cutoff Grade**	opt	0.0045	**0.0029**

15.1.3 Mineral Reserve Estimate

Using the NI 43-101 Updated Mineral Resource Estimate filed in November 2011, Proven and Probable Reserves of 53,254,000 tons at a grade of 0.016 opt are contained in the mineral resource at Pan. A total of 864,000 oz of gold are contained in the Pan Project mineral reserves. Estimated mineral reserves for the Pan Project are presented in Tables 15-2 and 15-3.

Table 15-2 North and Central Pan Mineral Reserves

North and Central Pan Cutoff Grade: 0.008 opt / 0.274 g/tonnes	Tons	Gold	
	(x 1000)	opt	ounces (x 1000)
North Pan			
Proven Reserves	12,625	0.018	223.30
Probable Reserves	10,993	0.015	162.66
Proven & Probable Reserves	23,618	0.016	385.95
Inferred within Designed Pit	351	0.012	4.29
Waste within Designed Pit	27,823		
Total tons within Designed Pit	51,791		
Central Pan			
Proven Reserves	1,799	0.015	27.78
Probable Reserves	1,125	0.013	15.00
Proven & Probable Reserves	2,924	0.015	42.78
Inferred within Designed Pit	75	0.010	0.77
Waste within Designed Pit	5,387		
Total tons within Designed Pit	8,386		
Sub Total - North + Central			
Proven Reserves	14,423	0.017	251.08
Probable Reserves	12,119	0.015	177.66
Proven & Probable Reserves	26,542	0.016	428.74
Inferred within Designed Pit	426	0.012	5.06
Waste within Designed Pit	33,210		
Total tons within Designed Pit	60,177		

Table 15-3 South Pan and Total Pan Project Mineral Reserves

South Pan - Phases 1 and 2 Cutoff Grade: 0.006 opt / 0.206 g/tonnes	Tons	Gold	
	(x 1000)	opt	ounces (x 1000)
South Pan - Phase 1			
Proven Reserves	11,856	0.018	215.44
Probable Reserves	7,593	0.016	119.26
Proven & Probable Reserves	19,449	0.017	334.70
Inferred within Designed Pit	56	0.010	0.55
Waste within Designed Pit	31,887		
Total tons within Designed Pit	51,392		
South Pan - Phase 2			
Proven Reserves	1,548	0.014	21.01
Probable Reserves	5,716	0.014	79.80
Proven & Probable Reserves	7,263	0.014	100.81
Inferred within Designed Pit	212	0.016	3.39
Waste within Designed Pit	29,485		
Total tons within Designed Pit	36,961		
Sub Total - Phase 1 + 2			
Proven Reserves	13,404	0.018	236.46
Probable Reserves	13,308	0.015	199.05
Proven & Probable Reserves	26,713	0.016	435.51
Inferred within Designed Pit	269	0.015	3.94
Waste within Designed Pit	61,372		
Total tons within Designed Pit	88,353		

Total Reserves	Tons	Gold	
	(x 1000)	opt	ounces (x 1000)
Proven Reserves	27,827	0.018	487.51
Probable Reserves	25,427	0.015	376.71
Proven & Probable Reserves	53,254	0.016	864.22
Inferred within Designed Pit	695	0.013	9.0
Waste within Designed Pit	94,582		
Total tons within Designed Pit	148,531		

16 MINING METHODS

16.1 Open Pit Mine Plan

The Pan gold deposit contains mineralization at or near the surface and spatially distributed in a manner that is ideal for open pit mining methods. Gold grade distribution and the results of preliminary mineral processing testing indicate that ore from the Pan deposit can be processed by conventional heap leaching methods. The method of material transport evaluated for this study is open pit mining using a 21.6-yd^3 front end shovel as the main loading unit with a 16-yd^3 front end loader as a backup loading unit. The ore will be loaded into 150-ton haul trucks and transported to the primary jaw crusher, which will be set up at the mouth of the pit. The primary jaw crusher is a semi-mobile unit mounted on skids that will be moved to the mouth of whichever pit is being mined. The crushed ore material will be conveyed to the secondary crushing site, crushed to P80 ½-inch (North) and P80 1½-inch (South), agglomerated, and conveyed to the heap leach pad. The waste material will be loaded into the 150-ton haul trucks and hauled directly to the waste dump. The truck haul method was chosen over in-pit mobile crushers and mobile conveyors in order to simplify waste dump construction and allow for more flexibility in day to day mining activities.

MIDWAY will own, operate, and maintain all equipment. The general site layout, including pits, waste dumps, the secondary crusher site, infrastructure, ponds, and heap leach pads, is shown on Figure 16-1.

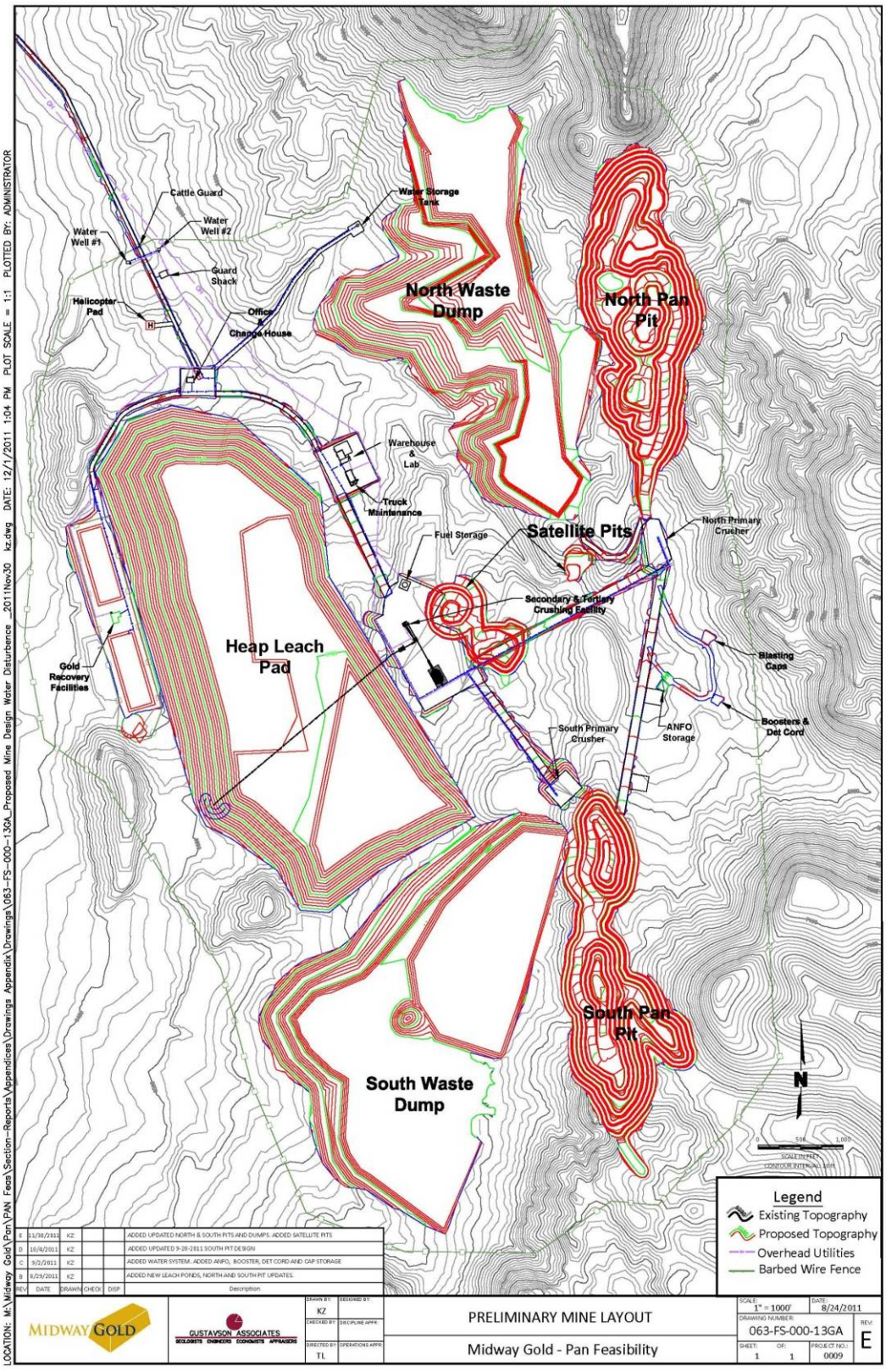


Figure 16-1 General Site Layout

Ore production is planned at a nominal rate of 17,000 tons per day (tpd), equivalent to 6.2 million tons per annum with a 8.8 year mine life. Mining is planned on a 7 day per week schedule, with two 12 hour shifts per day. Peak ore and waste production is estimated at 67,000 tpd. The average life of mine stripping ratio is 1.79:1 waste-to-ore, using a 0.006 Au oz/ton cutoff for the South Pan pit and a 0.008 Au oz/ton cutoff on the North and Central pits. The change in cutoffs from one pit to the next are a result of the metallurgical recovery testing which showed the South pit has an expected average recovery of 85% and the North pit has an expected recovery of 65%. Other cutoff scenarios were evaluated using 0.004, 0.006 and 0.008 Au oz/ton, but the scenario presented here provides the best IRR and NPV at a 5% discount rate.

16.1.1 Pit Design

Whittle-generated pit surfaces, which maximized revenue based on the estimated average of $1,180 per ounce gold, were used in conjunction with the Pan block model to design the open pits with haul roads and catch benches for North Pan, Central Pan, and South Pan. Pit designs are based in part on geologic criteria provided in the April 2011 Prefeasibility Level Pit Slope Evaluation report produced by Golder Associates. Geologic solids created for each lithological unit were used as a guide during the pit design process. The limestone units were designed with a 50° inter-ramp wall angle assuming pre-split blasting in these units, all other lithological units were designed at a 45° inter-ramp wall angle. Haul roads are designed at a width of 90 ft, which provides a safe truck width (23 feet) to running surface width ratio of 3.9. Maximum grade of the haul roads is 10%, except for the lowermost three to five benches where the grade is increased to 12% and the ramp width is narrowed to 50 feet to minimize excessive waste stripping. The pit design criteria are presented in Table 16-1.

Table 16-1 Pit Design Criteria

Mine Design Criteria		
Pit Design Criteria	**Limestone Units**	**All Other Rock Units**
Inter-Ramp Angles	50 Degrees	45 Degrees
Face Angles	70 Degrees	63 Degrees
Catch Bench Berm	30 ft.	30 ft.
Catch Bench Vertical Spacing	60 ft.	60 ft.
Minimum Turning Radius	90 ft.	90 ft.
Road Widths	90 ft.	90 ft.
Road Grade	10%	10%
Road Widths Pit Bottom	50 ft.	50 ft.
Road Grade Pit Bottom	12%	12%

Design of the North Pan pit has not changed considerably from the design considered during the Prefeasibility Study, but the size of the final South Pan pit has approximately doubled. The increase in size of the South Pan pit is based on the positive results of recent drilling in the Wendy target area. The Central Pan pits, which were not considered during the Prefeasibility

Study, are located very close to the leach pad and will also provide suitable over-liner material for pad construction. The Central Pan pits will be mined first and then backfilled with waste from the South Pan pit. Design of the South Pan pit includes two phases of construction in order to account for a strip ratio that is considerably higher than the other pit designs. An intermediate pit was also designed near the south end of the North Pan pit to provide a borrow source for over-liner material. The final pit designs are shown in Figure 16-2

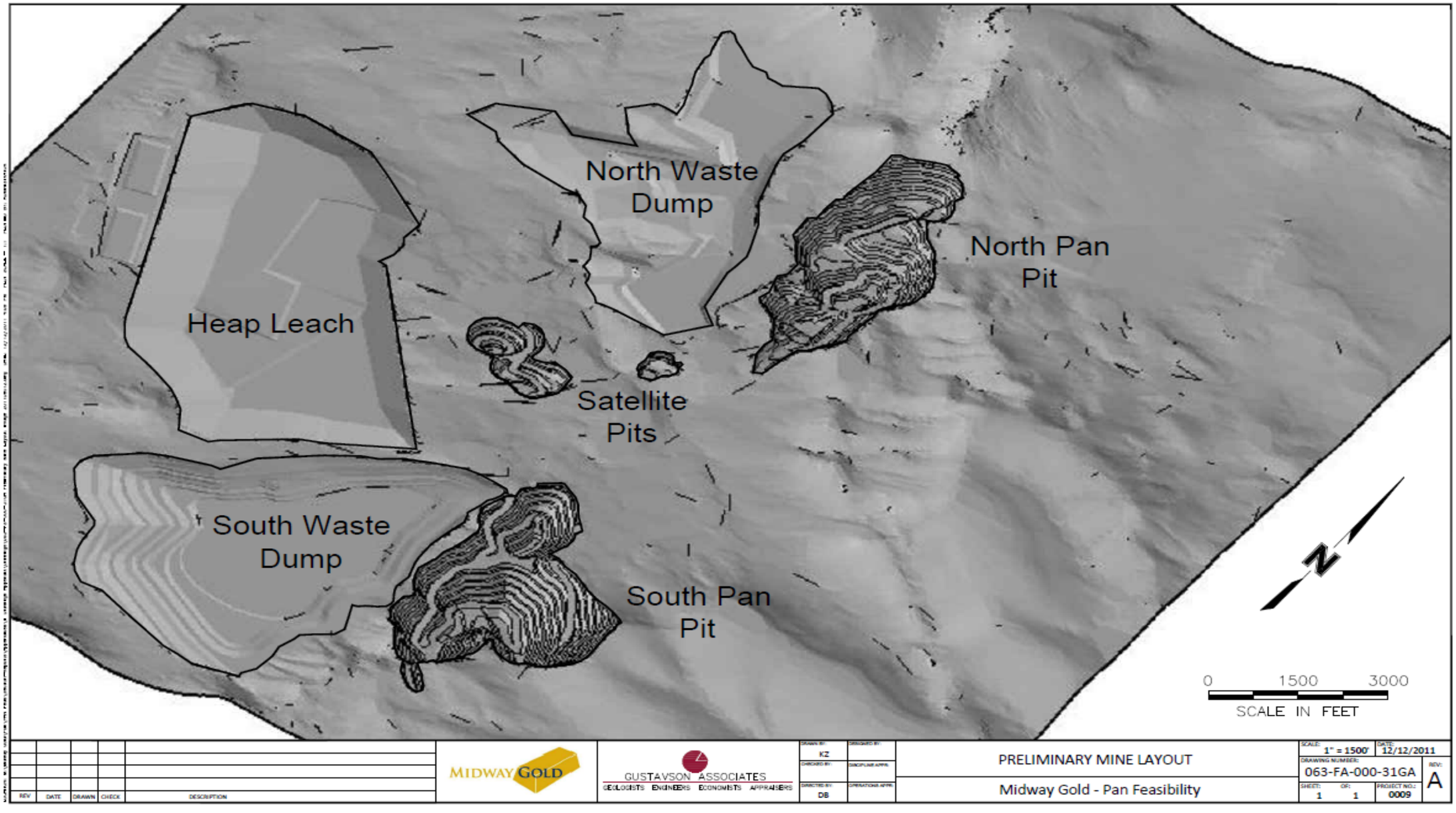


Figure 16-2 Final Pits, Heap and Waste Dumps

16.1.1.1 Geotechnical Pit Slope Evaluation

Golder Associates completed a pit slope evaluation in support of a prefeasibility study for the Pan Project in 2011, based in part on the results of their scoping level pit slope evaluation completed in 2010. The following paragraphs summarize the geotechnical recommendations provided by Golder, and additional detailed information is included in the associated report "Pan Project, White Pine County, Nevada, Pre-Feasibility Level Pit Slope Evaluation", dated April 2011. Gustavson finds the results of Golder's analysis sufficient for use in the current feasibility level study, provided that the associated recommendations are carried out in conjunction with forthcoming exploration work at the Pan Project.

General Slope Design Recommendations

For bedrock slopes where little potential for rock mass or structural control of overall or inter-ramp slope angles is indicated, achievable pit slope angles will be determined by the bench configurations that can be developed and maintained safely. Bench configurations are defined by production bench height, achievable bench face angle, and catch bench width, all of which combine to define the inter-ramp angle. Since catch bench width for a given bench height is constant according to usual design criteria, maximizing the inter-ramp angle will be contingent on excavating the bench face angle as steep as possible.

The pits are designed with 20-ft high production benches, which is typical for grade control in small gold mines. Stacking benches will be required to achieve moderate to steep inter-ramp slope angles with this small bench height. While it is premature to determine the most suitable bench configuration for optimized slope design, available data indicate that moderate to steep inter-ramp angles should be feasible in the strong rock units, and moderate inter-ramp slope angles should be feasible in the Tertiary volcanics, siltstone, shale, and breccia bodies, provided they are moderately to well indurated and are not highly clay altered.

Pit Slope Design Recommendations

Evaluation of structural data from oriented coring indicates that it should be possible to develop moderately steep bench face angles and inter-ramp slopes. Pit slope design recommendations in Table 16-2 are based on current understanding of geotechnical conditions at the site, and assumptions regarding operating practices as noted.

Table 16-2 Slope Design Recommendations

Geotechnical Unit	Sectors	Operating Practices	Bench Configuration and Height (ft)	Catch Bench Width (ft)	Bench Face Angle (deg)	Design Inter-Ramp Slope Angle (deg)
Massive, Strong Limestone	5,7	Pre-Split	Triple Bench 3X20 ft 60 ft between catch benches	29	70	50
Siltstone and Shale, Volcanics, Diamond Peak	1,2,4,8	Cushion Blasting	Triple Bench 3X20 ft 60 ft between catch benches	30	63 1/2 (H):1(V)	45
Breccia Bodies	1,2,6	Cushion Blasting	Triple Bench 3X20 ft 60 ft between catch benches	30	63 1/2 (H):1(V)	45
Pan Fault Zone	3	Light Blasting with Hard Digging	Triple Bench 3X20 ft 60 ft between catch benches	30	63 1/2 (H):1(V)	45

For pit designs, triple benching at the 20-ft high production bench to develop effective catch benches at vertical intervals of 60 ft is recommended. This will enable the development of moderate to steep inter-ramp slopes, but safe development of triple bench configurations will require implementation of effective controlled blasting and scaling to limit rockfall hazards.

Recommended Slope Stability Geotechnical Program

A geotechnical program to support project development should include:

- Oriented geotechnical core hole to characterize the Tertiary volcanic rocks in the north slope of the North Pan pit.
- Oriented geotechnical core hole to characterize the Diamond Peak Formation in the east slope of the North Pan pit.
- Surface structural mapping to confirm the quality and structural conditions of important units exposed at the surface.
- Shear testing of clay alteration of the Tertiary volcanic rocks and any units with significant clay alteration, and of weak argillized rock in the breccia bodies at South Pan.
- Preliminary perimeter blast designs to support equipment selection, and estimates of capital and operating costs.
- A recommended program of monitoring and slope design optimization.

16.1.2 Waste Dumps

The waste dumps were designed to represent natural terrain and drainages using a geomorphic design concept. The maximum slope angle of the waste dumps is limited to 3:1. The South Pan waste dump is designed with a capacity of 73.5 million tons to accommodate the current design tonnage of 61.6 million and allow for additional expansion of the South pit in the future. The North Pan waste dump has a capacity of 42.3 million tons to accommodate a design tonnage of 33.6 million. A three foot limestone cap will be placed on the waste dumps to limit the potential for acid generating waste on the surface of the dumps. The configurations of the North Pan and South Pan waste dumps are shown on Figure 16-2 above.

The volumes of limestone and non-limestone waste were calculated individually to determine if a sufficient volume of limestone waste is available for construction of the 3-foot caps. The estimated amount of limestone waste needed is about 4% of the total volume of waste per pit. Limestone will account for nearly 50% of the waste from the South Pan pit, and approximately 8% of the waste from the North Pan pit.

16.1.3 Annual Mine Plans

The end of year mine layouts are presented as Figures 16-3 through 16-10. The layouts show the sequencing of mining the Central pits first followed by the phase one South pit and then the North pit with the final stage being the phase two South pit.

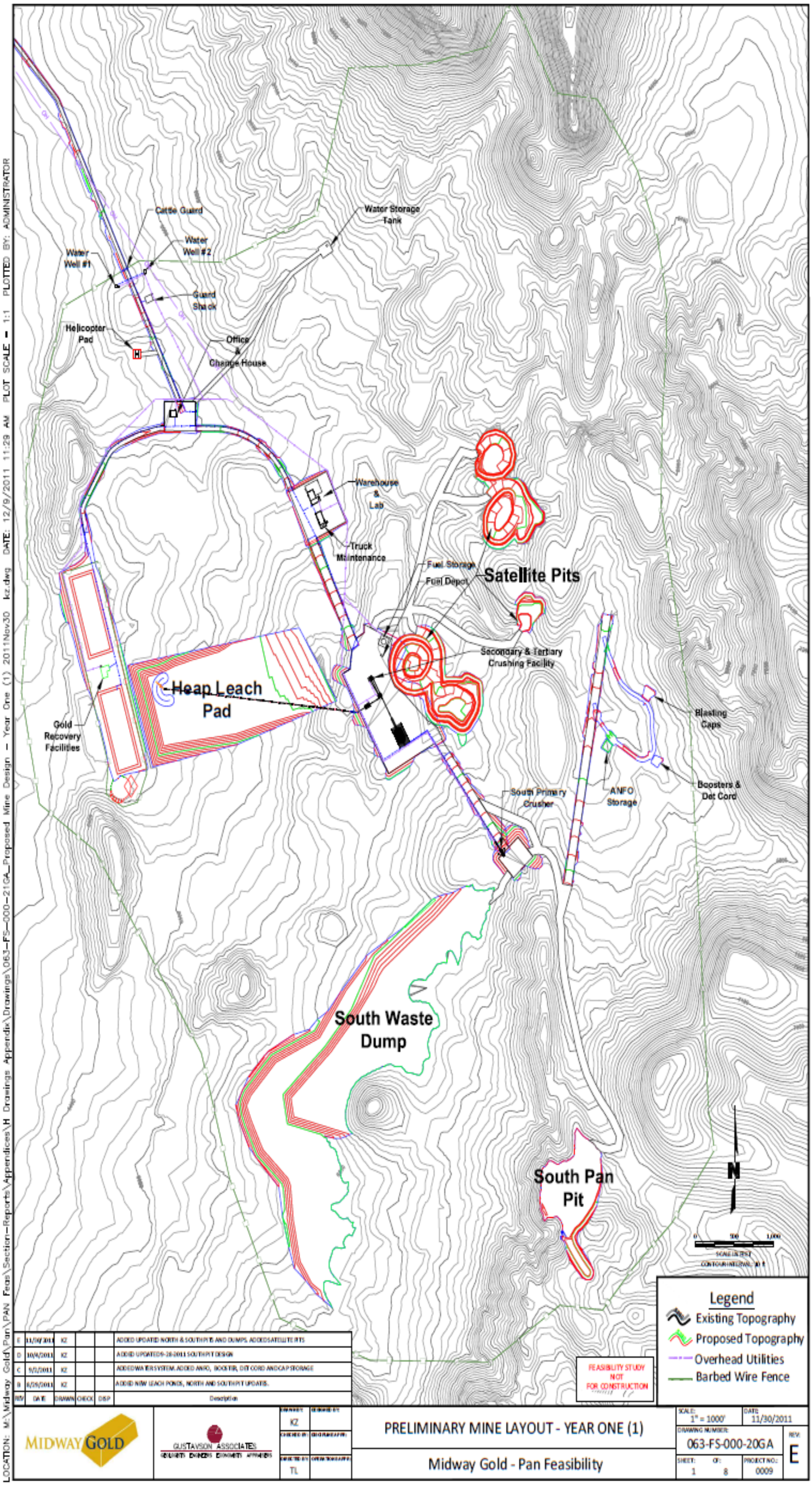


Figure 16-3 Mine Plan – Year 1

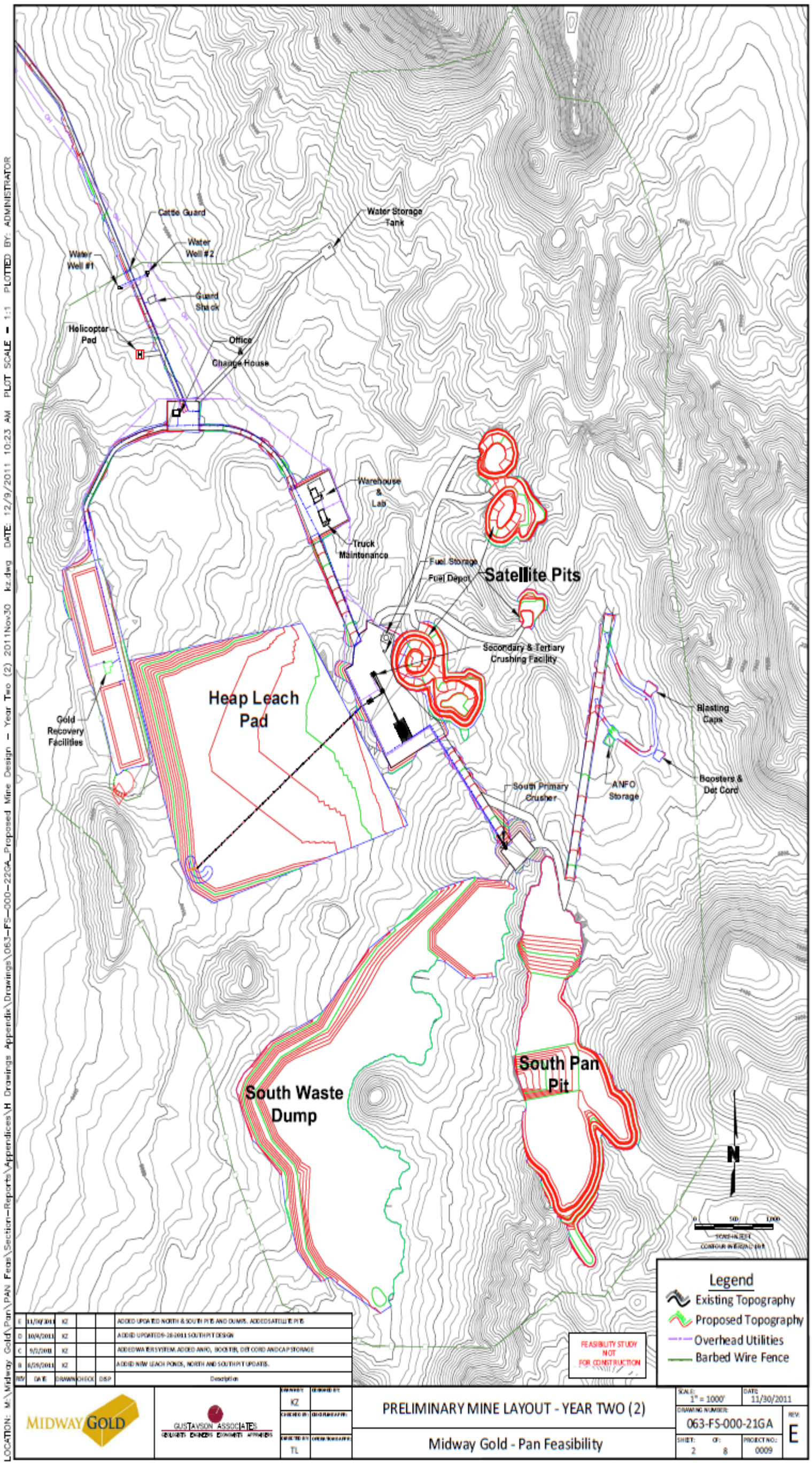


Figure 16-4 Mine Plan – Year 2

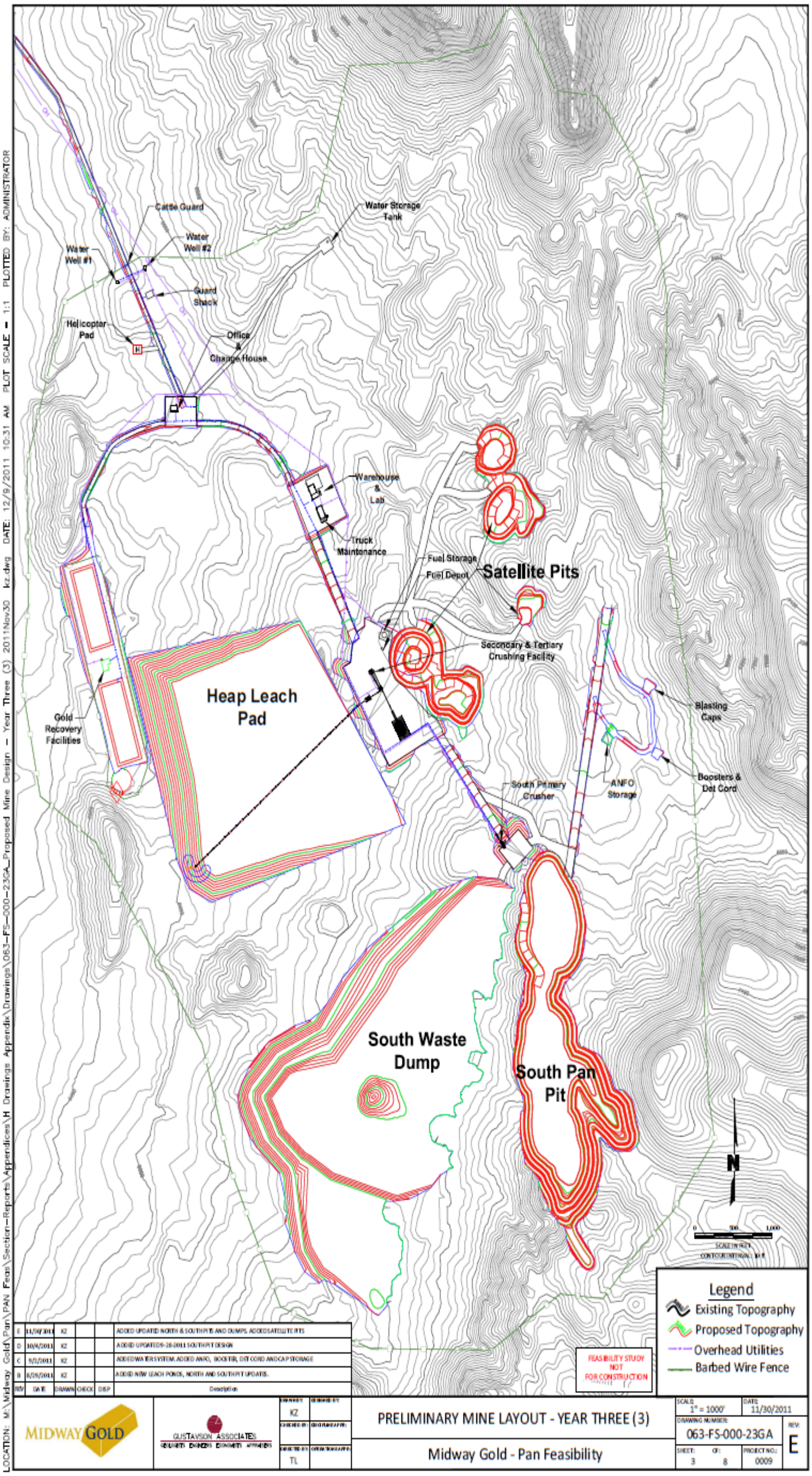


Figure 16-5 Mine Plan – Year 3

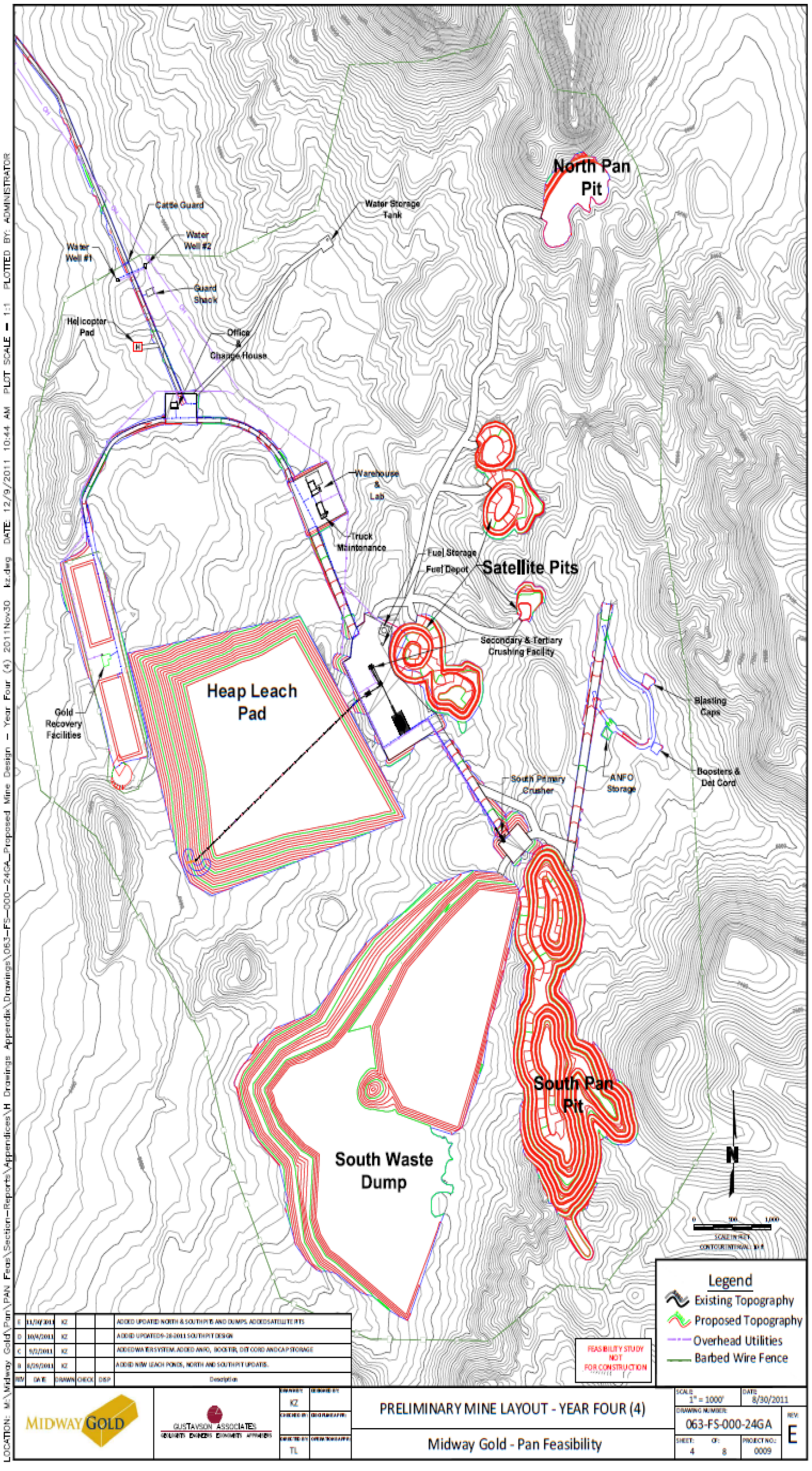


Figure 16-6 Mine Plan – Year 4

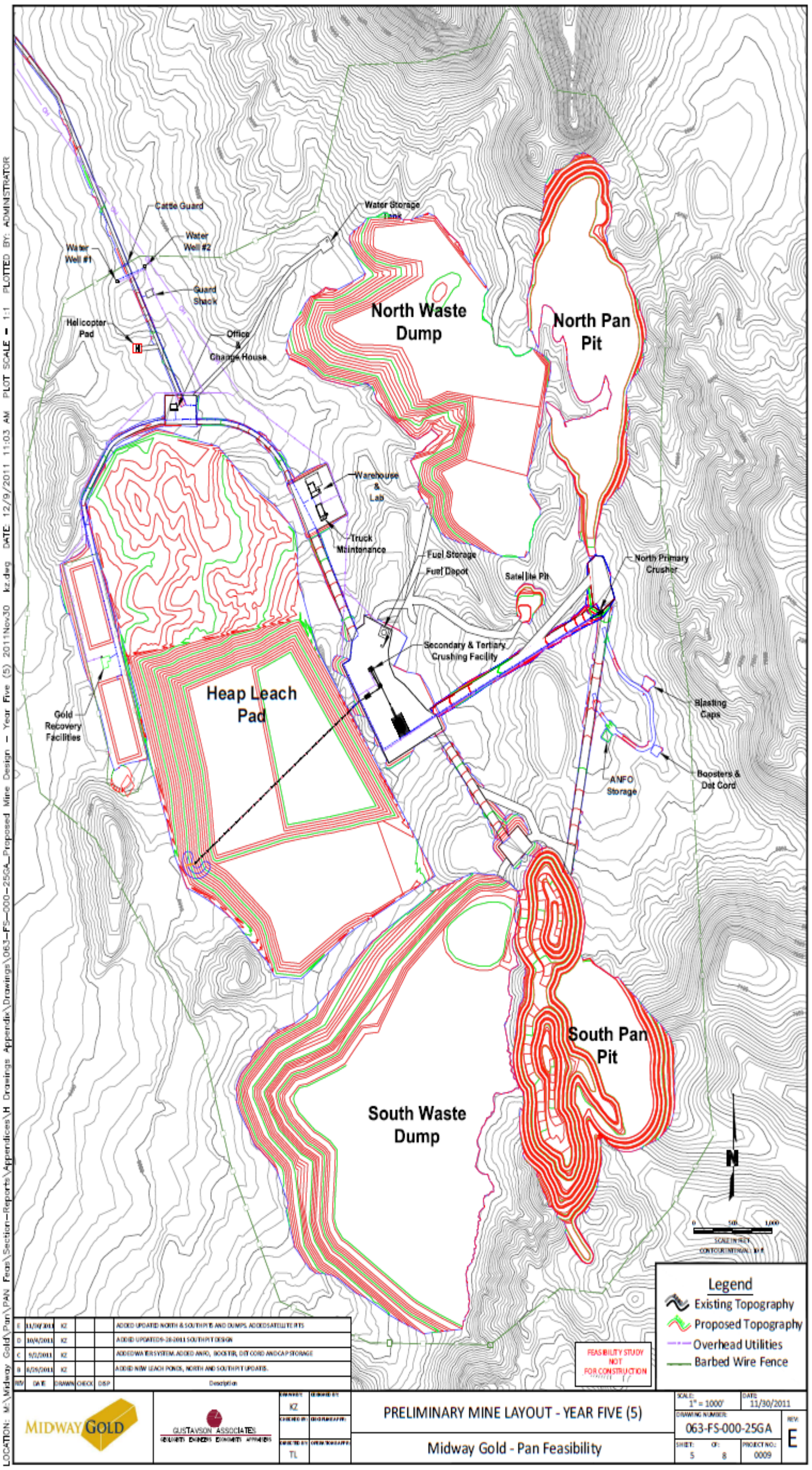


Figure 16-7 Mine Plan – Year 5

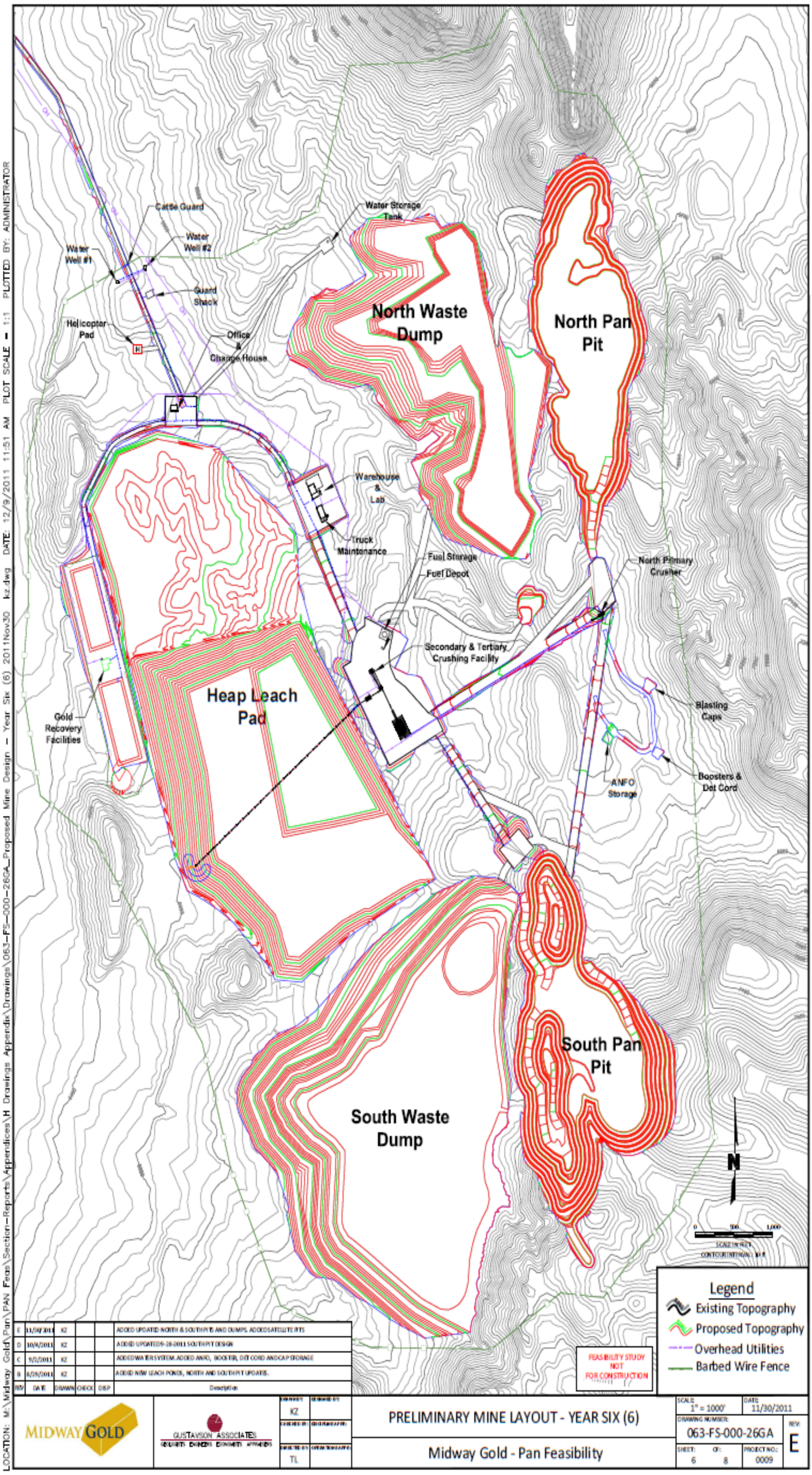


Figure 16-8 Mine Plan – Year 6

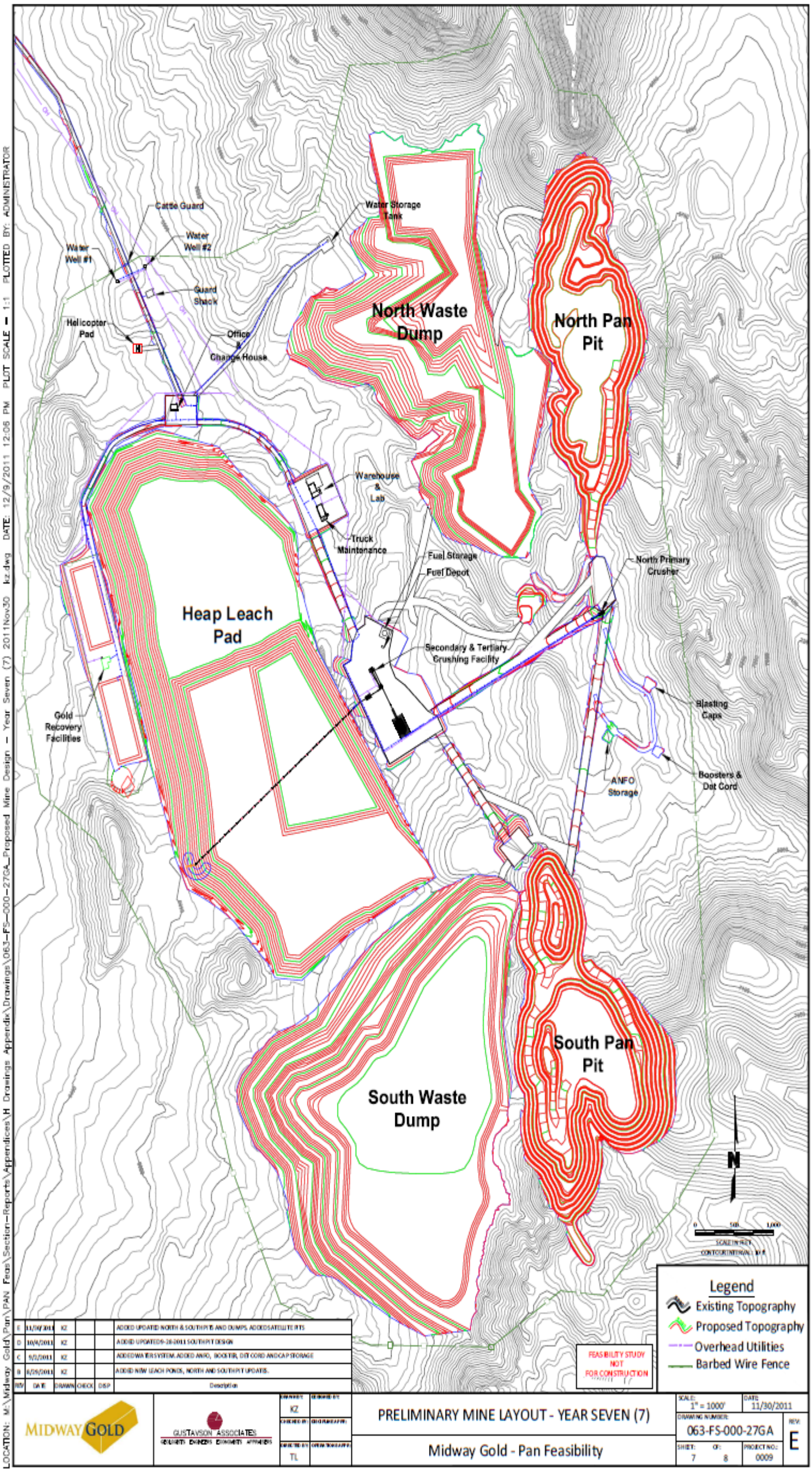


Figure 16-9 Mine Plan – Year 7

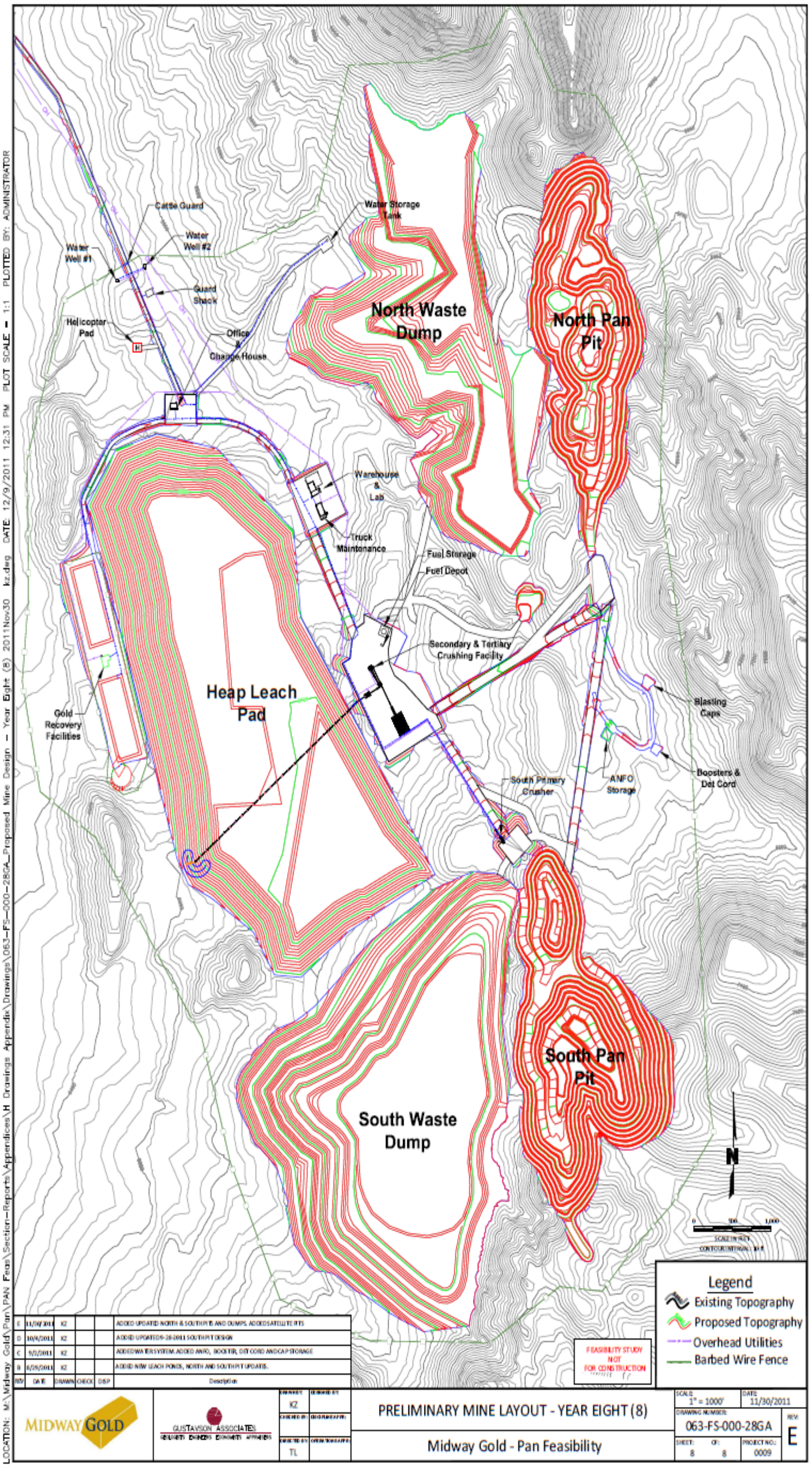


Figure 16-10 Mine Plan – Year 8

16.1.4 Geotechnical Design- Heap Leach Pad, Ponds, Stormwater Diversions

SRK prepared a conceptual design for the heap leach pad (HLP), ponds, and stormwater diversion facilities in November of 2010 for a pre-feasibility analysis and discussions with regulatory agencies (NDEP and BLM). After completion of the conceptual design, SRK supervised targeted site investigations and characterization and completed feasibility-level design.

The results of the feasibility design include the following components:

- Section 2.0 Design Criteria and Parameters;
- Section 3.0 Heap Leach Pad;
- Section 4.0 Stormwater Controls; and,
- Section 5.0 Stabilization for Closure.

The current mine plan calls for in-pit crushing of ore, transport to the HLP via overland conveyor, and ore loading by jump conveyors and a portable stacker.

16.1.5 Site Scale Hydrology

Site-scale hydrogeologic data are available from on-site boreholes and from a few existing and historical wells in the Pan Project vicinity. Additional shallow and deep monitoring wells are proposed for additional baseline hydrogeologic characterization and monitoring.

Based on existing data, which are summarized in the sections below, groundwater at the project site occurs in a deep, carbonate aquifer and a narrow, shallow alluvial aquifer along the normally dry stream channel west of the proposed mine area. Figure 16-11 presents a conceptual cross section of the proposed mine area. As shown in the figure, shallow alluvial groundwater west of the mine area occurs at elevations that are approximately 500 feet higher than the deep carbonate aquifer. The deep carbonate aquifer is approximately 650 to 800 feet below the proposed heap leach facility and approximately 600 feet below the bottom of the proposed south pit.

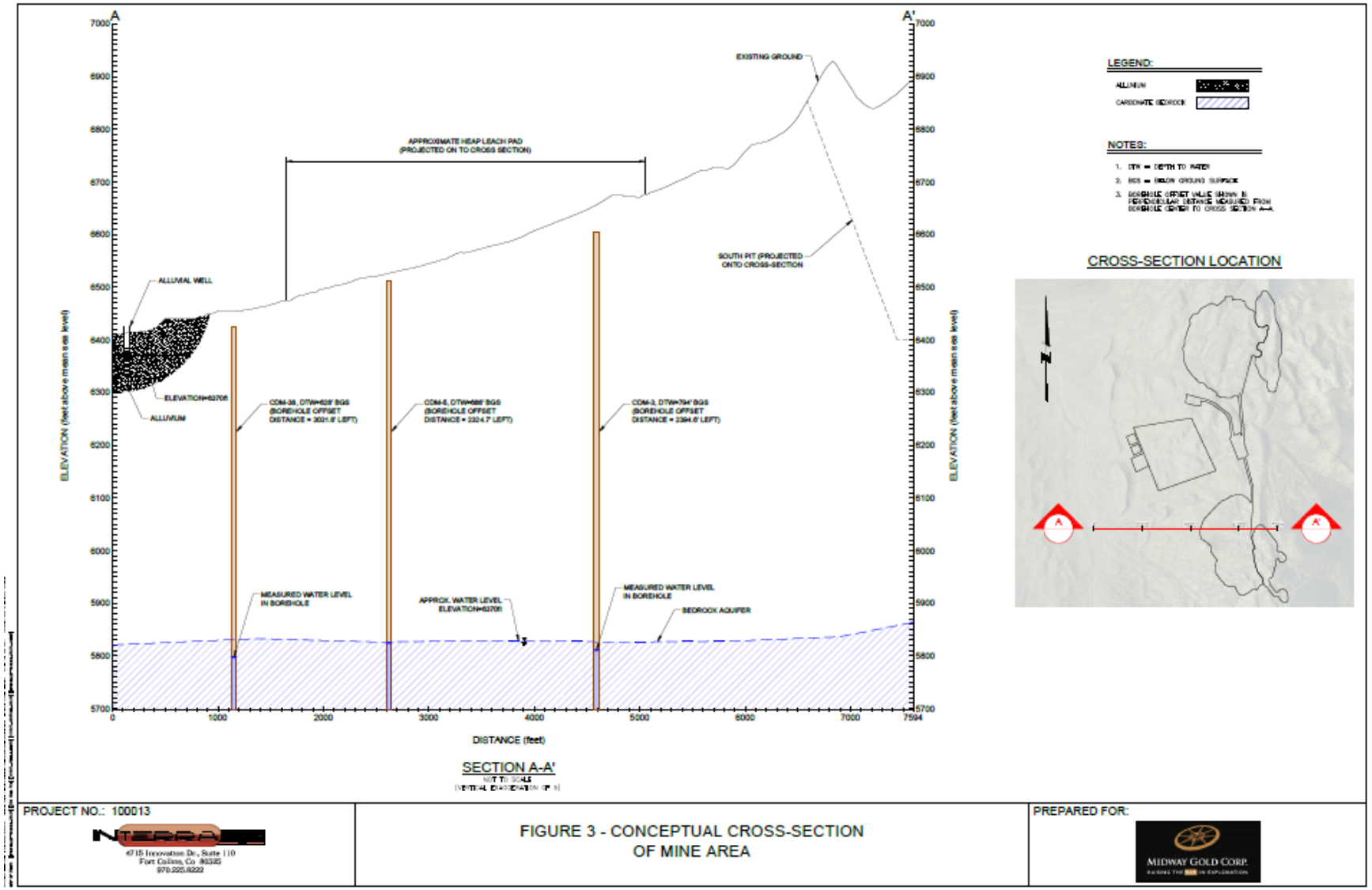


Figure 16-11 Conceptual Cross Section of the Pan Project Proposed Mine Area

16.1.5.1 Deep Bedrock Aquifer

Ten deep boreholes have been advanced on-site; three of which were dry and seven of which encountered groundwater in the deep carbonate aquifer. The locations of these boreholes are shown on Figure 16-12. The three dry boreholes were drilled to over 1,000 feet bgs near the ridgeline in 2006 and 2008. Logs for these holes indicate no groundwater, perched or regional, was encountered. Boreholes encountered primarily oxidized lithologic materials over the entire depths, suggesting long-term unsaturated conditions over the borehole depth. In spring of 2011, seven condemnation boreholes were drilled in the area of the proposed leach pad (approximately half a mile west of the ridgeline) and encountered groundwater at depths ranging from 628 feet bgs at borehole CDM-38 to 839 feet bgs at borehole CDM-33. Figure 16-12 also presents a potentiometric surface map for the deep carbonate aquifer. As shown on the figure, water level elevations range from 5,808 feet above mean sea level (amsl) at borehole CDM-38 to 5,866 feet amsl at borehole CDM-5. Water levels from boreholes CDM-1 and CDM-30 are excluded from the range of water level elevations and the potentiometric surface map because measurements from these boreholes were not confirmed by SRK. Water levels indicate that groundwater flows to the northwest with a hydraulic gradient of about 0.03. Based on the water level elevations from the condemnation drilling program, it is reasonable that at higher elevations on the ridgeline, depths to the carbonate aquifer are likely greater than 1,000 feet bgs. Surface elevations along the ridgeline range from approximately 6,600 to 7,400 feet amsl.

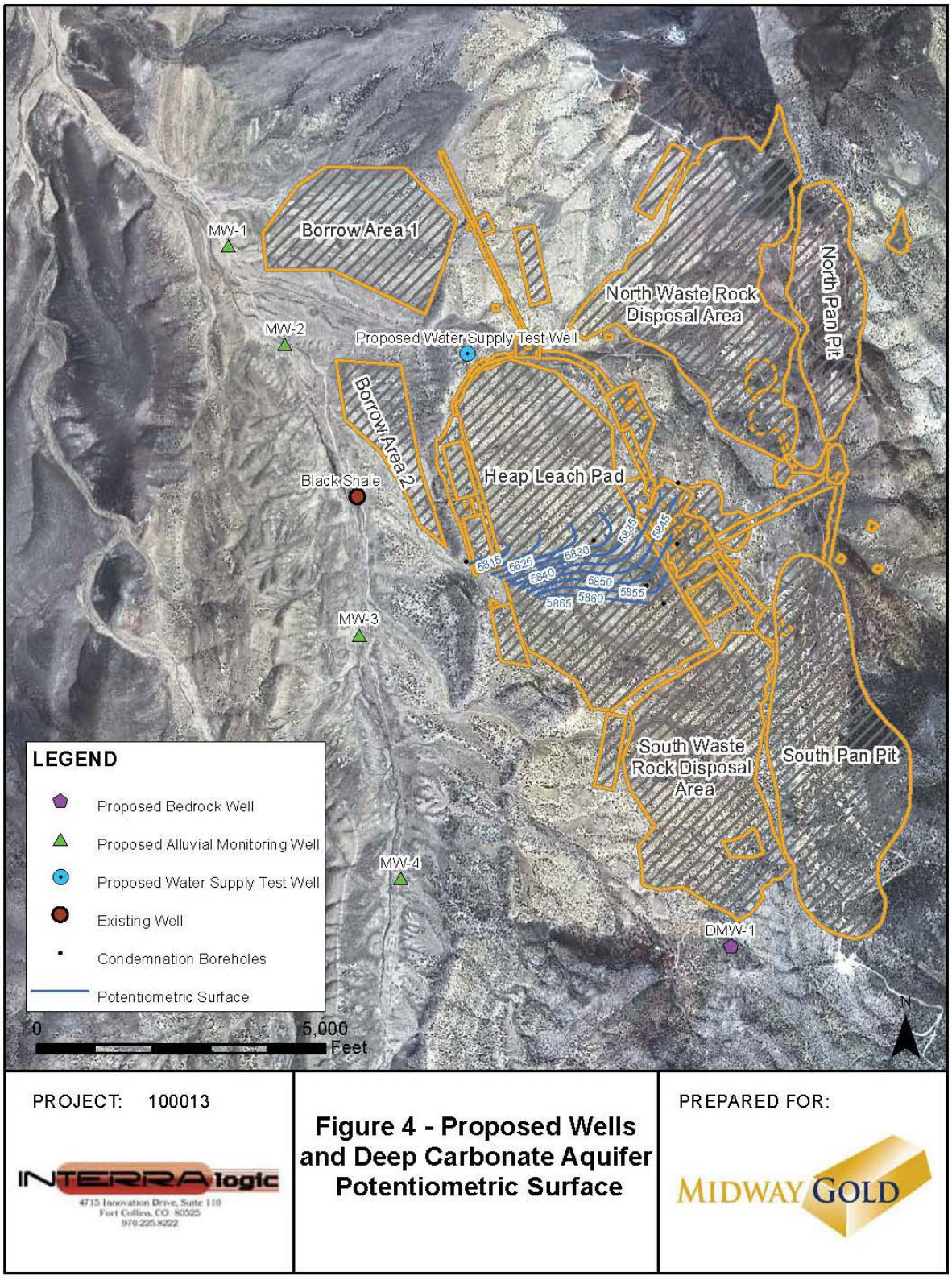


Figure 16-12 Deep Borehole Locations

16.1.5.2 Water Quality

Analytical laboratory results for groundwater samples from condemnation boreholes CDM-6, CDM-3, CDM-33, and CDM-38 indicate that the water quality of the deep aquifer is good, with neutral pH and low total dissolved solids (ranging from 260 to 290 mg/L). Additionally, water from the deep aquifer is warm, with temperatures near 80° Fahrenheit. Concentrations are below the Nevada Profile II reference values, except for concentrations of antimony and thallium for borehole CDM-33 and iron for borehole CDM-3. For borehole CDM-33, antimony and thallium are equal to the reference values of 0.006 mg/L and 0.002 mg/L, respectively.

Air-lift testing was conducted on the seven condemnation boreholes which encountered groundwater. Tests were conducted for several minutes at a purge rate of approximately 30 to 40 gpm. After air-lifting, a pressure transducer was immediately lowered into the borehole to monitor recovery of the water level. By the time the transducer was lowered into the water column, the water level had recovered to static, suggesting that the production potential of the bedrock aquifer is good.

16.1.5.3 Alluvial Aquifer

Shallow, alluvial groundwater has been encountered in wells in the Pan Project vicinity. The closest existing well, identified as the Black Shale Well (also referred to as the Black Shade Well on the USGS Quadrangle map), is located approximately half a mile west of the northwest corner of the proposed leach pad. The State Well Drillers Report indicates that the well was drilled to 66 feet bgs and completed to a depth of 45 feet bgs, with a water level of 32 feet bgs at the time of construction in 1977 (approximately 6,300 feet amsl). This is likely perched groundwater that occurs only along the narrow band of alluvium associated with the unnamed, ephemeral stream west of the project area. Alluvial groundwater also exists in the Newark Valley proper, about five miles west of the Pan Project area. Data from several center-pivot irrigation wells and some historical wells indicate that groundwater in the basin fill ranges from approximately 65 to 127 feet bgs (5,880 to 5,895 feet amsl). These wells are located approximately 5 miles west and northwest of the Pan Project area and are also shown on Figure 16-13.

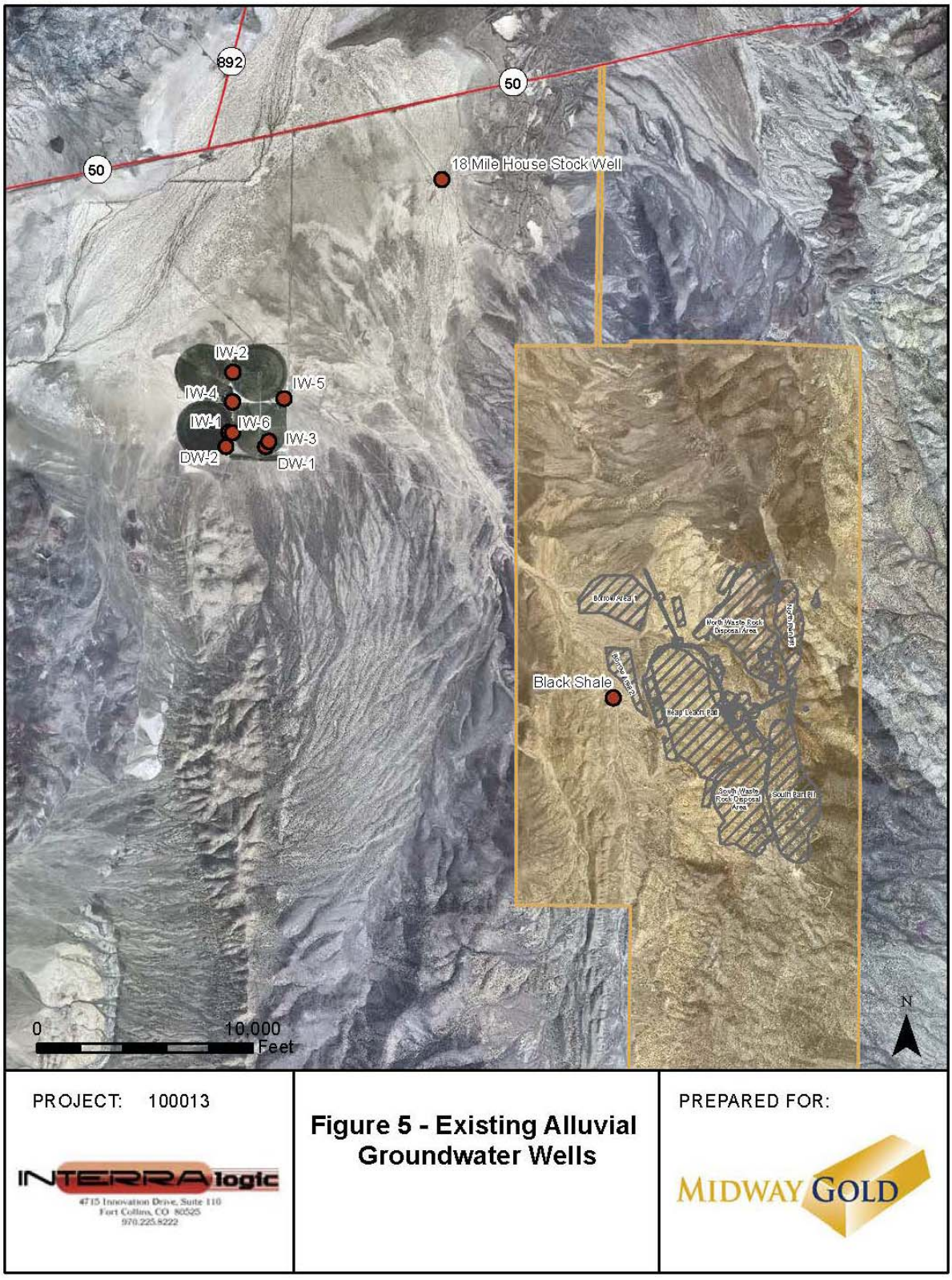


Figure 16-13 Existing Wells in Alluvial Aquifer

16.1.6 Mining Equipment

The initial mine production equipment will include a 21.6 yd^3 shovel, this unit is a Bucyrus (formerly O&K) RH120E front shovel. A Cat 992 15 yd3 front end loader is also scheduled as a loading unit during the higher stripping phases, this unit will also function as a backup loading unit for the front shovel during lower stripping phases. Initially four Cat 785D 150 ton haul trucks are required to meet the production schedule. During year two of full production an additional 785D will be added to meet production requirements. Two Atlas Copco DM45 drills will also be purchased initially with a third one purchased during year two when the production requirements increase. Tables 16-3 and 16-4 list the initial and additional equipment requirements respectively.

Table 16-3 Initail Mine Equipment

Description	# Units
Initial Mine Production Equipment	
Rotary Drill 6.75" - 600HP	2
Front Shovel - 21.6 yd3	1
Loader - 15 yd3	1
Rear Dump Trucks - 150 ton	4

Table 16-4 Additional Mine Equipment

Description	# Units
Additional Mine Production Equipment	
Rotary Drill 6.75" - 600HP	1
Rear Dump Trucks - 150 ton	1

16.1.7 Support Equipment

Support equipment will consist of a Cat 834H wheel dozer and a Cat D9 dozer as the main dozing units. The rubber tire dozer was chosen versus two track type dozers for its increased mobility for levelling out the leach pad and waste dumps. A Cat 16M grader will service the haul roads along with a 10,000 gallon water truck. A 1.2 yd^3 Cat 320D excavator will be purchased for scaling highwalls and other miscellaneous projects around the mine site. Six mobile light plants will be purchased for lighting the working areas during night time production. A maintenance service truck with a mobile crane will be purchased for field maintenance and a self-contained fuel lube truck will be purchased for infield fuelling. Mine support equipment is summarized in Table 16-5.

Table 16-5 Mine Support Equipment

Description	# Units
Mine Support Equipment	
Rubber Tire Dozer - 554HP	1
Dozer - 464HP	1
Graders 16'	1
Water Truck 10,000 gal	1
Maintenance Service Truck & Fuel Lube Truck	2
Excavator - 1.2 yd3	1
Light Plants (10 KW)	6
Pumps 40 HP	1

16.2 Preproduction Development

The preproduction requirements at Pan are minimal given the presence of mineable ore that outcrops in both the North and South Pan pits. Gustavson has included an allowance for pioneering, clearing, grubbing, and initial haul road construction, and the estimated quantities and costs associated with these tasks are presented in Table 16-6. Clearing and grubbing of the leach pad is included in the leach pad capital cost estimate.

Table 16-6 Pan Project Mine Development

Description	# Units	Unit	$/Unit	Cost
Mine Development				
Pioneering, Clearing and Grubbing	1	LS	$500,000	$500,000
Haul Road Construction	15,000	Ft	100	1,500,000
Total Mine Development Capital				**$2,000,000**

The upper benches at the northern end of the North Pan pit contain a tuffaceous clay material believed to be suitable for use as leach pad under-liner construction material. A total of 150,000 tons of this material is scheduled during preproduction to meet the requirements of the first phase of leach pad construction. The over-liner material, which is a hard silica based ore, will come from the Central Pan pits and from the southern end of the North Pan pit, if necessary. A total of 450,000 tons of this material is scheduled during the first two months of production.

16.3 Production Schedule

The yearly mine production schedule is presented in Table 16-7, with one half years production in year zero. The production schedule is driven by the nominal rate of 17,000 tpd. The production schedule has been calculated on a monthly basis throughout the life of the mine. Yearly peak ore and waste production is estimated at 62,000 tpd, though there are months when the ore and waste production will approach 67,000 tpd.

Table 16-7 Yearly Production Schedule

PRODUCTION SCHEDULE	Yr -1 Total	Yr 0 TOTAL	Yr 1 TOTAL	Yr 2 TOTAL	Yr 3 TOTAL	Yr 4 TOTAL	Yr 5 TOTAL	Yr 6 TOTAL	Yr 7 TOTAL	Yr 8 TOTAL	Yr 9 TOTAL	Life-of-Mine Yr -1 - Yr 11
TOTAL MINE PRODUCTION												
Pit Ore (000 tons)	0	3,516	6,205	6,222	6,255	6,172	6,378	6,604	7,296	4,606	0	53,254
Grade: Au (oz/ton)	-	0.015	0.016	0.016	0.019	0.017	0.017	0.015	0.014	0.016	-	0.016
Pit Lowgrade Ore (000 tons)	0	0	0	0	0	0	0	0	0	0	0	0
Grade: Au (oz/ton)	-	-	-	-	-	-	-	-	-	-	-	-
Pit Waste - Rock (000 tons)	0	3,890	2,908	4,269	2,611	9,753	14,456	12,521	9,058	2,965	0	62,432
Pit Limestone Waste - Rock (000 tons)	0	3,322	6,846	9,679	4,595	295	1,884	1,606	1,856	2,714	0	32,797
Total Tons Mined	**0**	**10,727**	**15,959**	**20,171**	**13,460**	**16,221**	**22,717**	**20,731**	**18,210**	**10,286**	**0**	**148,483**
Other, (000 tons)	0	120	180	180	180	180	180	180	180	1,187	538	3,105
Total Tons Moved	**0**	**10,847**	**16,139**	**20,351**	**13,640**	**16,401**	**22,897**	**20,911**	**18,390**	**11,473**	**538**	**151,587**
Strip Ratio	0.00	2.05	1.57	2.24	1.15	1.63	2.56	2.14	1.50	1.23	0.00	1.79
Tons ore mined/day (000 tons)	0.0	19.5	17.0	17.0	17.1	16.9	17.5	18.1	20.0	12.6	0.0	
Total Tons mined per day (000 tons)	0.0	59.6	43.7	55.3	36.9	44.4	62.2	56.8	49.9	28.2	0.0	
PIT GOLD OUNCES MINED												
Ore (ounces)	0	51,889	100,062	101,487	121,532	103,197	109,170	99,973	105,391	71,544	0	864,245
Lowgrade Ore (ounces)	0	0	0	0	0	0	0	0	0	0	0	0
Total Contained Oz	**0**	**51,889**	**100,062**	**101,487**	**121,532**	**103,197**	**109,170**	**99,973**	**105,391**	**71,544**	**0**	**864,245**

16.3.1 Pit Design Schedule Sequence

The Central Pan pits are scheduled for construction first, followed by the Phase 1 South Pan pit, the North Pan pit, and finally the Phase 2 South Pan pit. The Central Pan pits will be backfilled with waste from the Phase 1 South Pan pit to allow for placement of the conveyor from the North Pan pit to the secondary crusher. The option of mining the entire South Pan pit before the North Pan pit was evaluated during the scheduling process. Although the South Pan pit has a 20% higher recovery factor, mining the South Pan in phases results in a higher IRR by delaying the high strip of the Phase 2 South Pit until the end of the mine life. The option of mining the North Pan pit first was also evaluated, but the higher recovery from the South Pan pit (85%, compared to 65% from North Pan) and shorter estimated leach times render the South Pan pit the more favorable option to mine first.

There are times in the production schedule when material is mined from the north pit for construction materials required for the leach pad construction. The phase one under-liner material is scheduled to be mined from the upper benches of the north pit during the pre-production phase. The phase one over-liner material, which is a harder silica ore, is scheduled to come from the central pit. The phase two under-liner and over-liner material will be mined from the north pit. The phase three under-liner and over-liner material will be mined from the north pit during year three; the south pit will still be the main production pit during this year. Leach pad construction materials are presented by tons in Table 16-8.

Table 16-8 Leach Pad Construction Materials

Pad Construction Materials					
Pad Phase	Pad Capacity	Under-liner		Over-liner	
		Tons	Source	Tons	Source
Phase I	6.5M tons	472,181	North Pit	527,000	Central Pit
Phase II	24.8M tons	320,000	North Pit	900,000	North Pit
Phase III	36.7M tons	340,000	North Pit	1,080,000	North Pit

The production schedule by pit is presented in Table 16-9. Stripping of the phase one South pit begins in year zero during the mining of the Central pits. The phase one South pit lasts until the first month of year four with the North pit stripping beginning in the last month of year three. Stripping of the phase two South pit begins at the start of year five with two trucks and the 992 loader slowly stripping at approximately 24,000 tpd for two and a half years while the North pit is the main ore production pit.

Table 16-9 Production Schedule by Pit Design

Note: All Tons are in 1,000's	Yr 0 Total	Yr 1 Total	Yr 2 Total	Yr 3 Total	Yr 4 Total	Yr 5 Total	Yr 6 Total	Yr 7 Total	Yr 8 Total	Yr 9 Total	Life-of-Mine Yr -1 - Yr9
SOUTH PIT											
Pit Ore	592	6,205	6,222	6,205	225	173	382	2,102	4,606	0	26,713
Grade: Au (oz/ton)	0.015	0.016	0.016	0.019	0.014	0.009	0.009	0.012	0.016	0.000	0.016
Pit Waste - Rock	284	2,908	4,269	2,332	23	5,716	6,820	6,702	2,965	0	32,020
Pit Limestone Waste - Rock	994	6,846	9,679	4,595	5	1,753	1,522	1,464	2,714	0	29,572
Total Tons Mined	**1,869**	**15,959**	**20,171**	**13,132**	**254**	**7,642**	**8,724**	**10,269**	**10,286**	**0**	**88,305**
Strip Ratio	2.16	1.57	2.24	1.12	0.13	43.29	21.84	3.88	1.23	0.00	2.31
NORTH & CENTRAL PIT											
Pit Ore	2,924	0	0	50	5,947	6,205	6,222	5,194	0	0	26,542
Grade: Au (oz/ton)	0.015	0.000	0.000	0.015	0.017	0.017	0.015	0.016	0.000	0.000	0.016
Pit Waste - Rock	3,607	0	0	278	9,730	8,739	5,702	2,355	0	0	30,411
Pit Limestone Waste - Rock	2,328	0	0	0	290	131	84	392	0	0	3,224
Total Tons Mined	**8,859**	**0**	**0**	**328**	**15,967**	**15,075**	**12,007**	**7,941**	**0**	**0**	**60,177**
Strip Ratio	2.03	0.00	0.00	5.59	1.68	1.43	0.93	0.53	0.00	0.00	1.27

16.3.2 Production Schedule Parameters

The mine production schedule is based on a 7 day per week schedule, with two 12 hour shifts per day. There are four crews planned to cover the rotating schedule. Each 12 hour shift contains a half hour down for blasting and miscellaneous delays, a half hour for shift start up and shutdown and a hour for lunch breaks for a total of 10 effective working hours. Each year contains unscheduled time for nine holidays and four non-productive weather shifts. Table 16-10 shows typical monthly schedule parameters and hours scheduled.

Table 16-10 Mine Schedule Parameters

Mine Schedule	
Crews	4
Shifts/day	2
Hours/shift	12 hour
Lunch, Breaks, etc.	1 hour
Blasting, Misc.	0.5 hour
Startup & Shutdown	0.5 hour
Days/Month	31 days
Less Holidays	1 day
Less Weather and Un-Productive Shifts	0
Scheduled Hours/Month	**720**

The amount of equipment required to meet the scheduled tonnages is calculated based on the mine schedule, equipment availabilities, usages and haul and loading times by bench for the equipment. Equipment mechanical physical availabilities start at 93% for the trucks and drills and 92% for the loading units. For each year of production the mechanical physical availabilities decrease by one percent, the use of availability for all of the equipment is calculated at 83% based on the breaks and down time in the schedule parameters. An additional 85% efficiency factor is applied to all of the equipment for calculating the total units of equipment required. Table 16-11 below shows the equipment availability parameters by equipment type.

Table 16-11 Equipment Availabilities/Utilization

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9
Truck Physical Availability	93%	92%	91%	90%	89%	88%	87%	86%	85%	84%
Truck Use of Availability	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%
Truck Efficiency	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%
Total Truck Utilization	66%	65%	64%	64%	63%	62%	62%	61%	60%	60%
Loading Physical Availability	92%	91%	90%	89%	88%	87%	86%	85%	84%	83%
Loading Use of Availability	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%
Loading Efficiency	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%
Total Loading Utilization	65%	64%	64%	63%	62%	62%	61%	60%	60%	59%
Drills Physical Availability	93%	92%	91%	90%	89%	88%	87%	86%	85%	84%
Drills Use of Availability	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%
Drills Efficiency	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%
Total Drills Utilization	66%	65%	64%	64%	63%	62%	62%	61%	60%	60%

16.3.3 Drill and Blast Parameters

The design parameters used to define drill and blast requirements are based on a 6.75-inch blast hole on a 14-ft by 16-ft pattern in the ore zones and a 15’ by 17’ pattern in the waste zones. Benches will be blasted and mined on 20-ft levels with 3 ft of sub-drill. Buffer rows and pre-

shear are planned to allow for controlled blasting and minimize damage to the highwalls. The number of blast holes and blast hole drills required each month is calculated based on the parameters shown in Table 16-12 and used in calculating the operating costs. The majority of the mine life requires two Atlas Copco DM45 drills except for when the average daily total (ore plus waste) production is above 50,000 tpd at which time three drills are required to meet the production schedule.

Table 16-12 Drill and Blast Parameters

Production & Wall Control Blast Pattern Data		Production Pattern				
DRILLING & BLASTING PARAMETERS		Ore	Waste	Wall Control Pattern		
	Units	Bedrock	Bedrock	Buffer	Buffer	Pre split
Tonnage Factor	t/cubic foot	0.076	0.076	0.076	0.076	0.076
Blast Pattern Details						
Bench Height	feet	**20.00**	**20.00**	**20.00**	**20.00**	**20.00**
Sub Drill	feet	**3.00**	**3.00**	**3.00**	**0.00**	**0.00**
Diameter of Hole	inches	**6.75**	**6.75**	**6.75**	**6.75**	**6.75**
Staggered Pattern Spacing	feet	**14.00**	**15.00**	**12.00**	**10.00**	**6.00**
Staggered Pattern Burden	feet	**16.00**	**17.00**	**14.00**	**12.00**	**6.00**
Drill Equivalent Square Pattern	feet	15.00	16.00	13.00	11.00	6.00
Hole Depth	feet	23.00	23.00	23.00	20.00	20.00
Height of Stemming or Unloaded Length	feet	**12.00**	**12.00**	**15.00**	**15.00**	
Material Quantity						
Volume Blasted/Hole	cubic feet	4,500	5,120	3,380	2,420	720
Tons Blasted/Hole	tons	342	389	257	184	55
Powder Factor						
Percent Emulsion		**0%**	**0%**	**0%**	**0%**	
Percent Anfro		100%	100%	100%	100%	
Density of Powder	lbs/ft3	**56.19**	**56.19**	**56.19**	**56.19**	
Loading Density	lb/ft	13.96	13.96	13.96	13.96	5.00
Powder/hole	lb/hole	153.59	153.59	111.70	69.81	4.92
Powder Factor	lb/t	**0.449**	**0.395**	**0.435**	**0.380**	**0.090**
Powder Factor	lb/ft3	0.034	0.030	0.033	0.029	0.007
Drill Productivities						
Penetration Rate						
	ft/hr	**165.00**	**165.00**	**165.00**	**165.00**	**165.00**
Penetration Rate	ft/min	**2.75**	**2.75**	**2.75**	**2.75**	**2.75**
Cycle Time Estimate						
Drilling Time	minutes	8.36	8.36	8.36	7.27	7.27
Steel Handling Time	minutes	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Set up Time	minutes	**1.75**	**1.75**	**1.75**	**1.75**	**1.75**
Add Steel	minutes	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Pull Rods	minutes	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Total	**minutes**	**10.11**	**10.11**	**10.11**	**9.02**	**9.02**
Drilling Factors for Wall Control						
Wall Control Drill Holes Required	***Perimeter Blast***					
Pre-Shear Holes	holes/foot					**0.17**
Buffer Holes - 2 Rows	holes/foot			**0.08**	**0.09**	
Material to Remove from Production Blast	tons/foot			**19.76**	**16.72**	**9.12**

16.3.4 Load and Haul Parameters

The design parameter used to define the loading and hauling requirements are shown in Table 16-13. The main loading unit is a Bucyrus (formerly O&K) RH120E 21.6 yd^3 front shovel with a Cat 992 16 yd^3 front end loader as a backup unit. The shovel was chosen over front end

loaders as the main loading unit because of its higher loading rate versus the loaders which will be advantageous given the short cycle times of the trucks hauling ore to the crusher at the mouth of the pit. Cat 785D 150 ton haul trucks are the main hauling unit, the shovel is calculated to require 5 passes to load the trucks and the loader will require 7 passes. Cat 777 100 ton trucks were also evaluated in the schedule but the 150 ton trucks were found to be more cost effective than the 100 ton trucks. Haulage profiles for the ore and waste material from each pit were generated in FPC to calculate the truck cycle times which were used in the equipment requirement calculations.

Table 16-13 Load and Haul Parameters

Loading Parameters & Truck Match Calculation		Shovel	Loader
		785 Truck	785 Truck
Bucket Capacity (heaped)	yd3	**21.60**	**15.00**
Material Weight	tons/bcy dry	**2.052**	**2.052**
Material Weight Wet	tons/bcy wet	**2.062**	**2.062**
Bulk Factor (Swell Factor)		**1.35**	**1.35**
Material Weight = MW / BF	t/lcm dry	1.52	1.52
Moisture		0.5%	0.5%
Fill Factor		**0.90**	**0.90**
Effective Bucket Capacity = FF x BC	yd3	19.44	13.50
Material Weight = MW1 / (1-M)	wt/lcy	1.53	1.53
Material Weight = MW2 x (1-M)	dt/lcy	1.52	1.52
Tons/Pass	wt	29.69	20.62
Truck Size Capacity	yd3 heaped	**117.9**	**117.9**
Truck Size Capacity	wt	**150.0**	**150.0**
Theoretical Passes = TC1/ EBC	passes	6.06	8.73
Theoretical Passes = TC2 / TP	passes	5.05	7.27
Actual Passes	passes	**5.0**	**7.0**
Truck Load - Volume = AP x EBC	yd3	97.2	94.5
Truck Load for Simulation = AP x TP	wt	148.5	144.3
Truck Load for Productivity	dt	147.7	143.6
Truck Capacity Utilized = TLS / TC2	by weight	99.0%	96.2%
Truck Capacity Utilized = TL / TC1	by volume	82.4%	80.2%
Average Cycle Time	sec	**20**	**35**
Truck Spot Time	sec	**45**	**45**
Load Time per Truck = AP x AC + ST	sec	145	290
Load Time per Truck = AP x AC + ST	minutes	2.42	4.83
Maximum Productivity = 60 / LT	trucks/hr	24.8	12.4
Conversion = MP x TLP/ MW	bcy/hr	1,787.6	869.0
Tons/Hour	dt/hr	3,668.1	1,783.1

17 RECOVERY METHODS

17.1.1 Process Description

Material from the North, Central, and South Pan pits will be processed using conventional heap leaching methods. Ore will be mined and processed first from the Central pit, then the South pit (phase I), from the North pit, and finally from the South pit (phase II).

Ore will be crushed by the primary edge-of-pit mobile jaw crusher and secondary and tertiary cone crushers prior to leaching. Screening at secondary and tertiary crushing stations will control the crush size. The crushed ore will be agglomerated and conveyed to the heap leach pad. Crush size, leach kinetics, and recoveries are based on current metallurgical testing.

17.1.2 Production Rate and Products

The Pan mine and material handling system is designed for a throughput of 17,000 tons of ore per day, or 6.2 million tons of ore per year. The ADR plant is designed at 5,000 gpm, and is expected to produce approximately 80,000 ounces of gold per year. The entire mine and process flow is depicted in Figure 17-1.

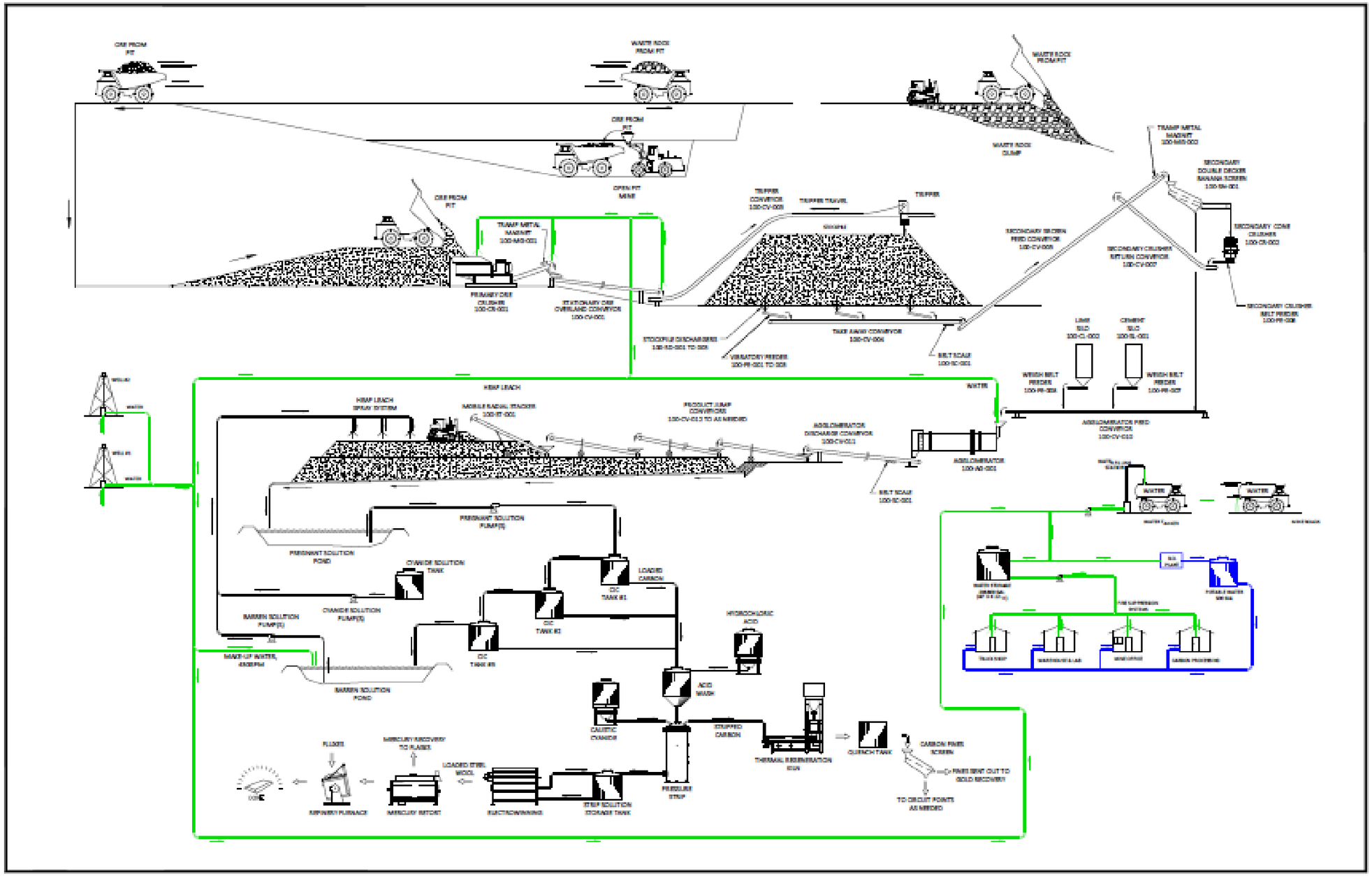


Figure 17-1 General Process Flow

17.1.3 Primary Crushing

Ore will be mined using shovels, loaders, and trucks. The ore will be delivered to the dump bin and grizzly immediately upstream of the primary 38 x 62 jaw crusher (Figure 17-2). The undersize from the grizzly will bypass the crusher and be loaded directly onto the primary ore conveyor. The oversize will be delivered to the jaw crusher and the crushed material will be transferred via a feeder onto the primary ore conveyor, where it will be combined with the bypassed material. The primary overland ore conveyor will deliver material to the primary ore stockpile located next to the secondary/tertiary crushing building.

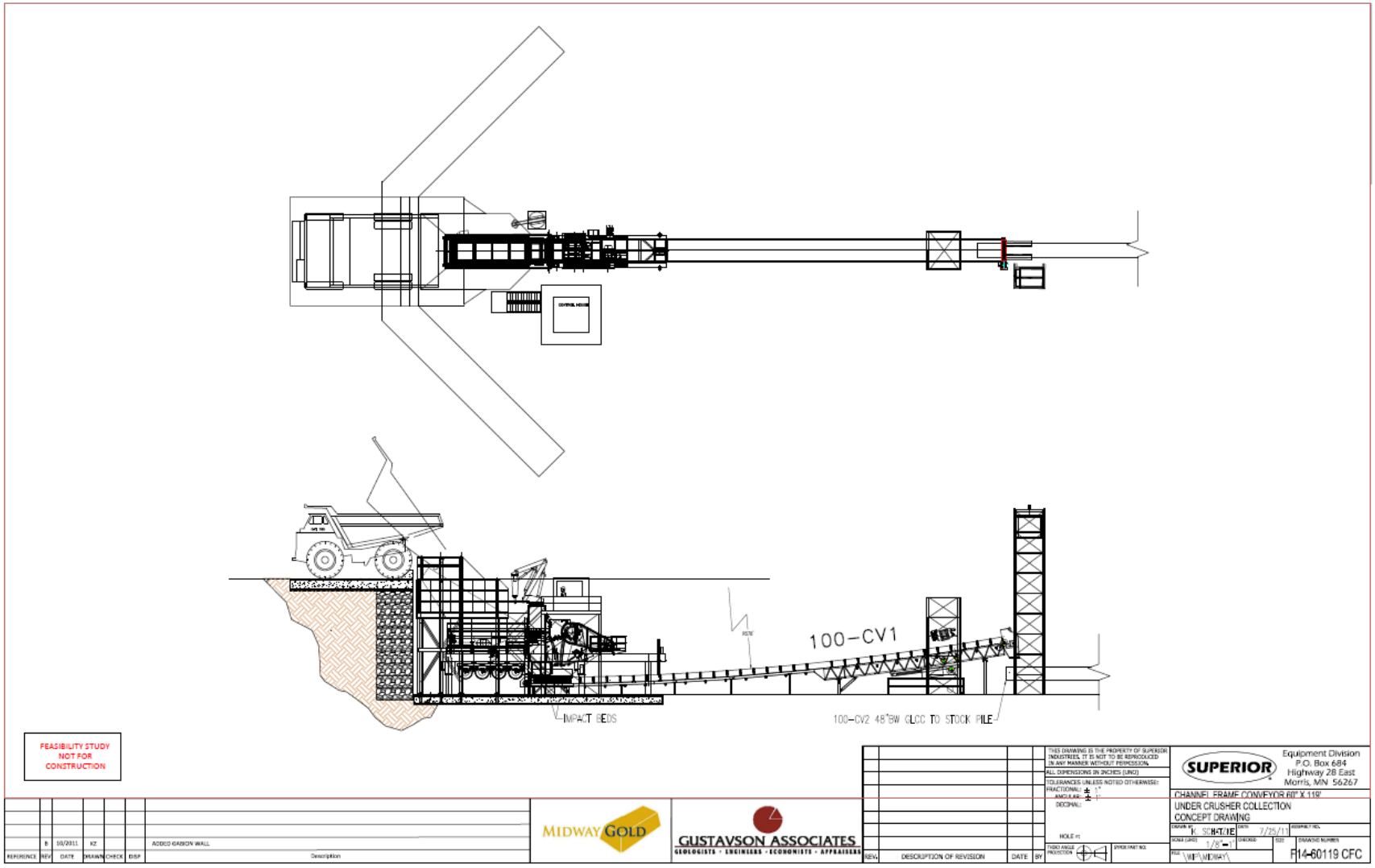


Figure 17-2 Primary Jaw Crusher

The primary crushed ore stockpile will contain a maximum of 20,000 tons of primary crushed ore. The stockpile will be covered with a fabric building and will have 3 live ore feeders, a loader feeder, and a reclaim conveyer which will carry the primary crushed ore to the secondary and tertiary crushing facility.

Equipment components included in the primary crushing, overland conveyor, and stockpile areas are:

- Primary Jaw crusher
- Oil lube pump
- Rock Box
- Hydraulic Leveling Jacks (includes 6)
- Primary Jaw MCC & VSD
- Rock Breaker
- Primary Jaw Control House
- Hydraulic Toggle Assembly
- 48" Heavy Duty Belt Feeder (included above)
- Jaw crusher transfer conveyor 100-CV-1
- Ore Overland Conveyor 100-CV 2
- Tripper incline 200-CV1
- Tripper Conveyor 200-CV2
- Loader Belt Feeder 200-LF
- Feeder Tunnel 200-FT1
- Tunnel Conveyor 200-CV3
- Stockpile building
- Belt Feeders

17.1.4 Secondary Crushing

Ore will be crushed and screened at the secondary and tertiary crushing facilities (Figure 17-3). At start-up and during mining of the South Pan pit, the crushing train will consist of a double deck screen and cone crusher capable of reducing the ore size to P80 1½-inch. During mining of the North Pan pit, the crushing train will include an additional screen and a tertiary cone crusher capable of crushing the ore to the finer size of P80 ½-inch.

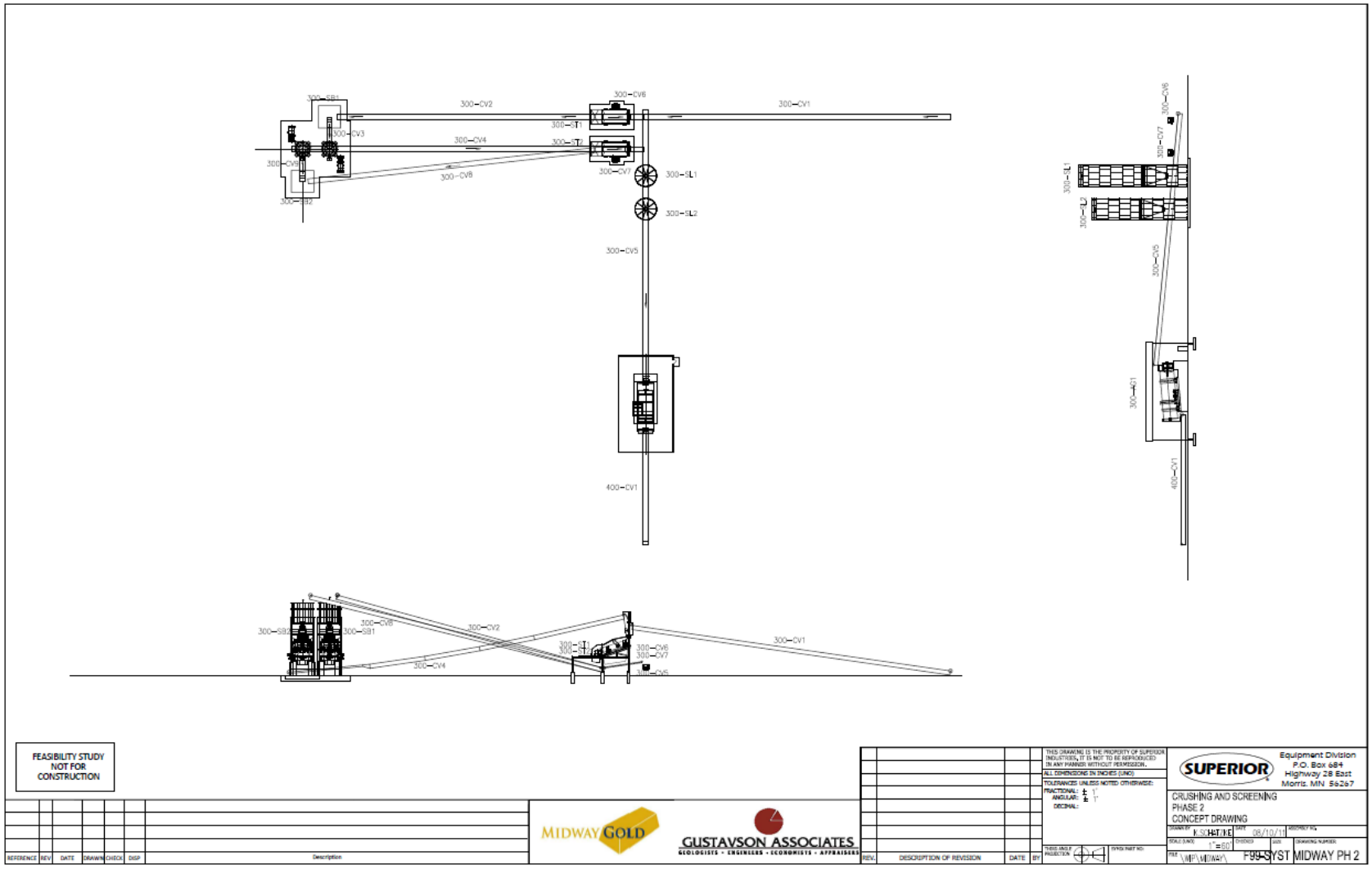


Figure 17-3 Secondary and Tertiary Crushing

Ore smaller than the set limit size will be collected from under the lower screen deck and delivered to the agglomerator by the agglomerator feed conveyor. The secondary and tertiary cone crushers will crush all of the oversized ore to the set size. All ore will be agglomerated and delivered to the leach ore conveyor. The leach ore conveyor will deliver the ore to the edge of the leach pad, where the ore will be transferred onto a chain of mobile conveyors that deliver ore to the mobile radial stacker, which then spreads the ore onto the leach pad.

Equipment components included in conveying and secondary/tertiary crushing are:

- Screen Feed Conveyor 300-CV1
- Screen Tower 300-ST1
- Screen Discharge Conveyor 300-CV2
- Surge Bin 300-SB1
- Transfer Conveyor 300-CV3
- Crusher Tower 300-CT1
- Return Conveyor 300-CV4
- Secondary Cone crusher
- Tertiary Cone crusher (future)
- Tertiary Screen (future)
- Tertiary return conveyors (future)
- Agglomerator Feed Conveyor 300-CV5
- Double Deck Screen
- Tramp Metal Magnet

17.1.5 Agglomeration

Cement, lime, and water required for agglomeration will be blended with the ore on the agglomerator feed conveyor (Figure 17-4). The agglomerator will spray water onto the rotating material and agglomerate the fine ore.

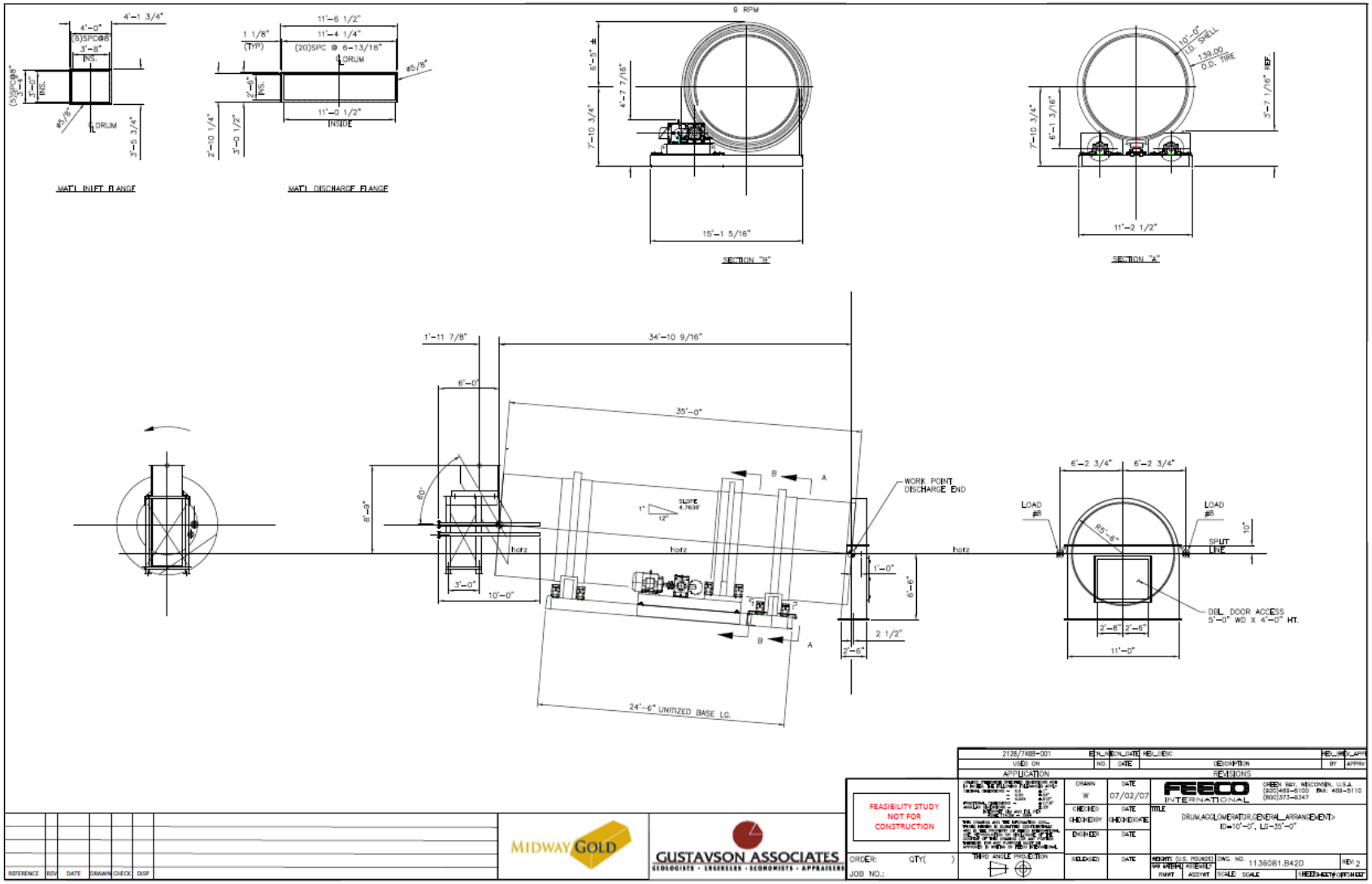


Figure 17-4 Agglomerator

Typical for most Carlin type ores, the reagent consumption is relatively low (Table 17-1). Based on the metallurgical test work, RDI recommended using 0.4 to 0.6 lbs sodium cyanide per ton. 0.50 lbs per ton sodium cyanide consumption at a P80 ½-inch crush size has been used in the economic model.

Table 17-1 Estimated Reagent Consumption

LIME	1.8 Pounds per ton
CEMENT	5 pounds per ton
CYANIDE 1 ½" Crush	0.27 pounds per ton
CYANIDE ½" Crush	0.50 pounds per ton

Tests were completed on both the South and North Pan materials to support these estimates.

Agglomeration equipment includes:

- Cement Storage Silo package
- Lime Storage Silo package
- Agglomerator Unit

17.1.6 Conveying and Stacking

Agglomerated ore is delivered to the short overland conveyor, which feeds a series of grasshopper conveyors and ultimately the telestacker conveyor (Figure 17-5). The telestacker conveyor distributes the crushed and agglomerated ore evenly across the leach pad, in 30 foot lifts.

- Agglomerator Discharge Conveyor 400-CV1
- Flat Grade Jump Conveyor 400-JC1-29
- Feed Conveyor 400-CV3
- IC Conveyor400-CV4
- Telestacker Conveyor

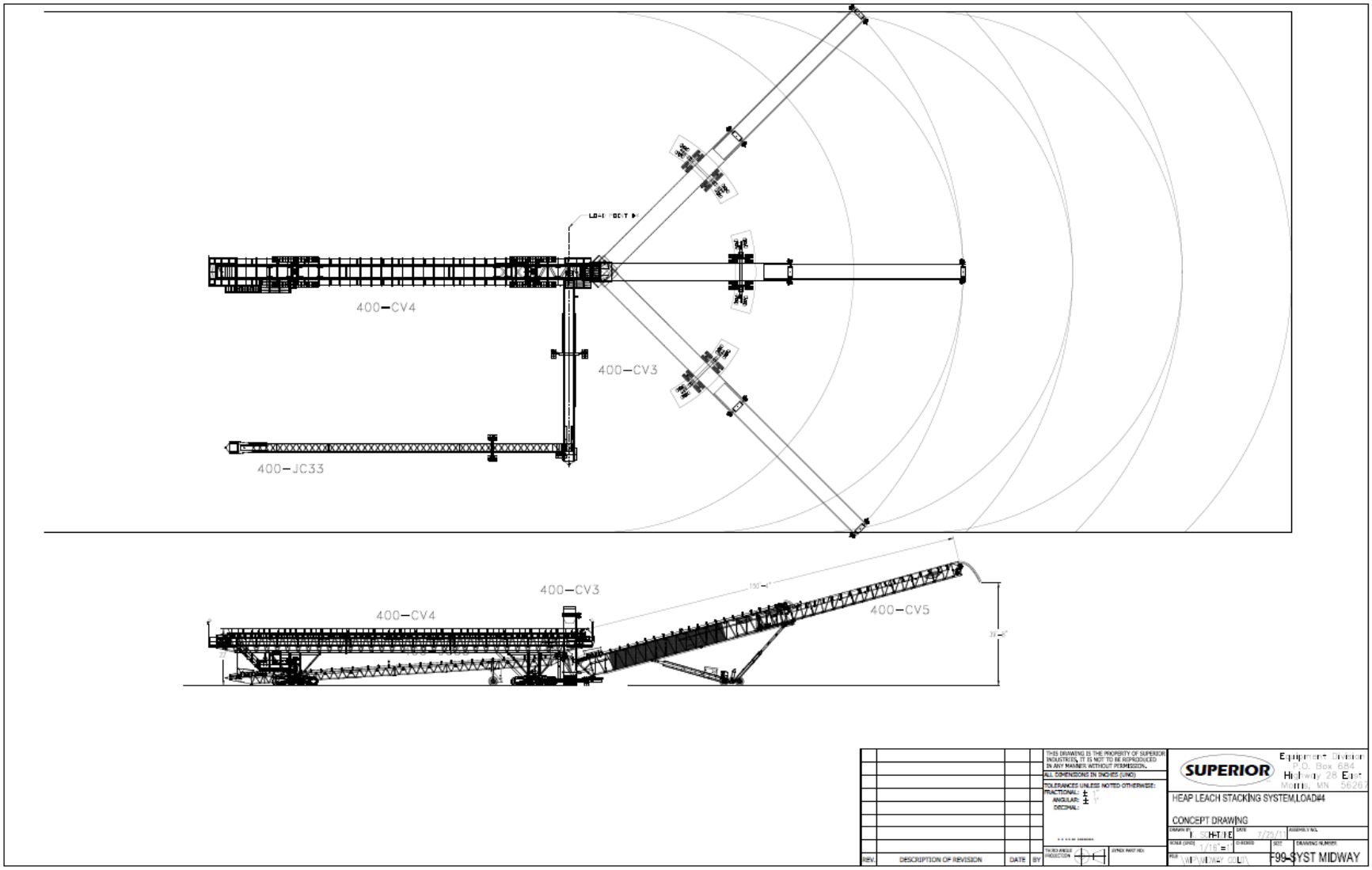


Figure 17-5 Telestacker

17.1.7 Heap Leach

Barren solution will be distributed on the leach pad with drip tube emitters. Pregnant solutions report to the pregnant collection pond, and are subsequently treated in a conventional adsorption/desorption refining (ADR) plant.

17.1.8 ADR Gold Recovery Plant

A general arrangement drawing for the ADR processing facility is shown on Figure 17-6. Summit Valley completed a full set of process flow diagrams and General Arrangement drawings as well as complete engineering drawings and specifications which are included in the Feasibility Study appendices.

The equipment list for the ADR plant is shown in Table 17-2.

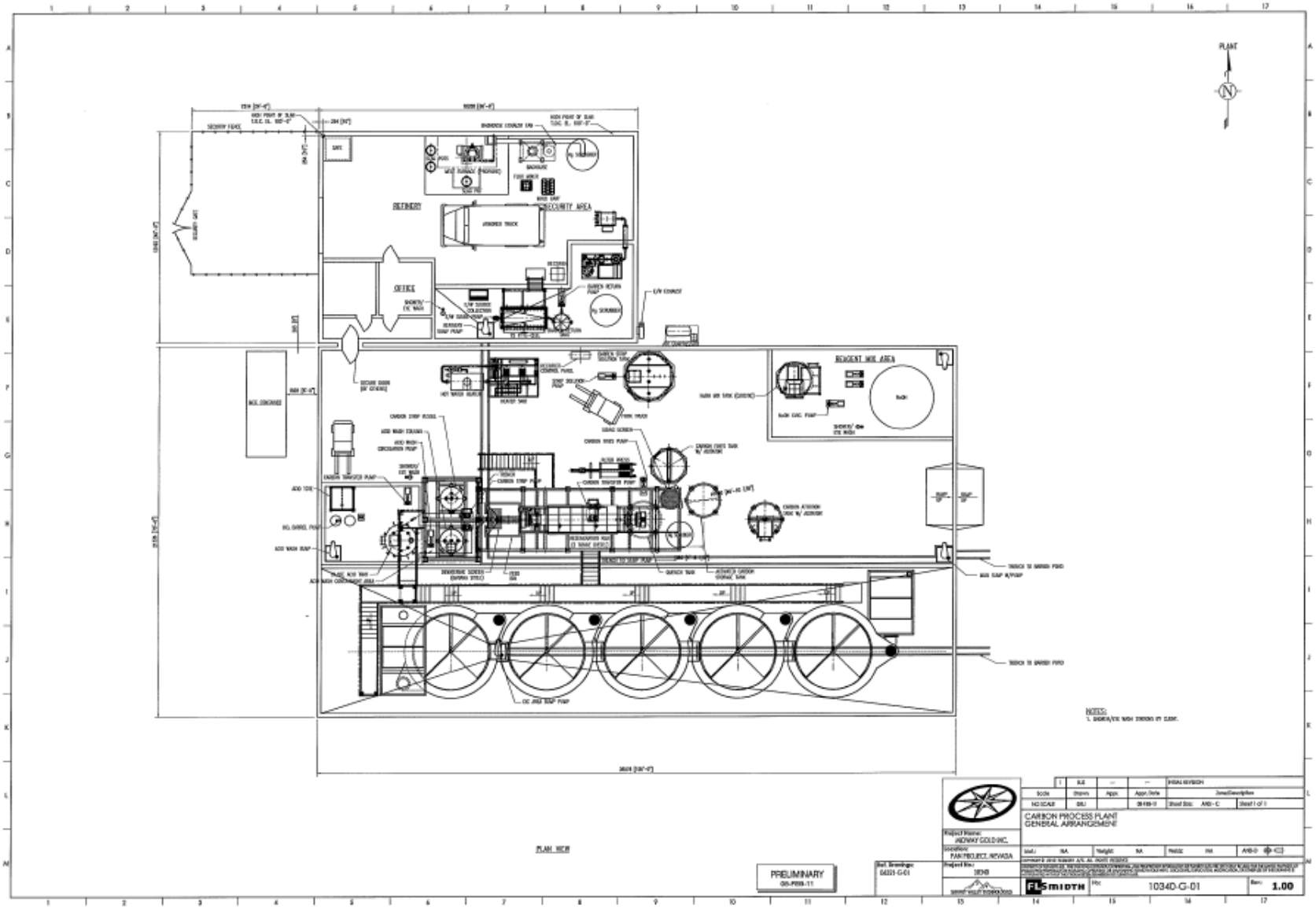


Figure 17-6 ADR Processing Facility General Arrangement

Table 17-2 ADR Plant Equipment List

ADR Plant Equipment Listing

Process Area	Equipment	Process Area	Equipment
Carbon-in-columns	Carbon Adsorption Columns (5) Columns, 5000 gpm / 4 Ton, Including:	**Electrowinning**	Electrowinning Cell Structural Steel
	Dart Valves, Interconnecting Piping,		Rectifier Rectifier-Cell
	Carbon Transfer Piping with Electric Actuated Valves,		Cables & Lugs Tank,
	Centrally located Carbon Transfer Valve Panel Switchboard,		E/W Barren Pump Box Pump,
	Carbon Transfer Pump,		E/W Barren Return Sampler,
	Structural Steel, Walkways, Handrail,		Wire Sampler,
	Trash Screen,		Wire Exhaust Fan Hg Abatement, E/W Carbon,
	Carbon Safety Screen with Barren Tank.		Hg Abatement (E/W) Filter,
	Pump, Carbon Transfer (CIC) Pump, CIC Sump		EW Sludge Pump,
Acid Wash	Tank, Acid Wash Column,		EW Sludge,
	2 Ton Structural Steel/Platform,		Air-Driven Diaphragm
	Acid Wash Vessel Spray,		High Pressure Sprayer Pump,
	Acid Wash Tank Internal Screen,		Sump (Refinery)
	Acid Wash Tank Top Johnson Screen,		Filter, Basket
	Acid Wash Tank Bottom Johnson Tank,	**Carbon Regeneration**	Kiln, Carbon Regeneration Structural Steel/Walkw
	Dilute Acid Fan,		Feed Bin and Screw Feeder Tank,
	Exhaust Instrumentation,		Quench Dewatering Screen
	pH Meter & Probe Pump,		Exhaust Fan & Duct Hg Abatement,
	Carbon Transfer (AW) Pump,		Kiln Carbon, Hg Abatement (Kiln)
	Acid Wash Circulation Pump,		Control Panel
	Acid Wash Sump Pump,	**Carbon Sizing & Handling**	Screen, Carbon Sizing Tank,
	Concentrated HCl Barrel		Carbon Fines Agitator,
Strip Vessel	Tank, Strip Vessel,		Carbon Fines Pump,
	2 Tonne Structural Steel/Platform & Stairs Access,		Carbon Fines Filter,
	Strip Vessel Spray,		Carbon Fines
	Strip Vessel Internal Screen,		Carbon Transfer Pipe & Hose,
	Strip Vessel Top Johnson Screen,		Valves Pump,
	Strip Vessel Bottom Johnson Instrumentation,		Carbon Transfer Tank,
	Inc Relief Valve & Rupture Disk		Carbon Holding Tank,
	Tank, Strip Vessel Blow-off Protection Column Pump,		Carbon Attrition Agitator,
	Carbon Transfer, Strip		Carbon Attrition
Heater Skid	Solution Heater Pump,	**Reagent mixing & storage**	Tank, NaOH (Caustic)
	Boiler Circulation Filter,		Mix & Storage Bin Vent,
	Carbon Bucket Trap Filter,		Caustic Mix Tank Pump,
	Carbon Bucket Trap Heat Exchanger,		Caustic Mix/Transfer Tank,
	Strip System Primary Heat Exchanger,		NaCN (Cyanide) Storage Pump,
	Strip System Secondary Heat Exchanger,		NaCN Distribution Pump,
	Strip System Tertiary Heat Exchanger,		NaCN Distribution Instrumentation,
	Strip System Trim Skid Mount & Pre-Pipe Instrumentation,		Miscellaneous Pump,
	Back-Pressure & Relief Valves Tank,		Reagent Area Sump
	Barren Strip Solution Pump,	**Refinery**	Melt Furnace Baghouse,
	Strip System Pump,		Cartridge Type Blower,
	Sump (Strip Solution)		Melt Furnace Baghouse & Scrubber
	Instrumentation		Melt Furnace Hood,
			Duct,
			Curtains Hg Abatement (Melt Furnace) Carbon,
			Hg Abatement (Furnace)
			Cascade Stand,
			500 oz Molds (5),
			Slag Pot (2),
			Cart

18 PROJECT INFRASTRUCTURE

The Pan project is located within a few miles of an existing high-voltage power line. A major highway (US 50) passes within 6 miles of the project area, water is available on site in adequate quantities, and support for operations personnel and equipment and supplies are available in both Ely and Eureka.

18.1 Facilities

The major buildings planned for the Pan Project include:

18.1.1 Office Building

The office building is a 2-story, 9600-sf building to house the administrative, environmental, and Human Resources staff (Figure 18-1). Building space is allocated for meetings and training.

18.1.2 Warehouse and Laboratory

The warehouse and laboratory will be housed in a 13,050-sf building with a high-bay/low-bay configuration (Figure 18-2). The warehouse will be housed in the high-bay and the laboratory housed in the low-bay. The laboratory will contain sample prep equipment, fire-assay, and solution-assay equipment capable of processing 200 fire-assay samples per day and 100 solution assay samples per day. A fenced-in yard area will be located immediately adjacent to the large overhead doors of the warehouse.

18.1.3 Truck Shop & Maintenance

The truck shop will consist of a 10,500-sf building configured with 2 large bays and a single wash bay with sufficient work space to conduct maintenance on the 150-ton trucks and 992 loaders planned for the project (Figure 18-3). The shop will also house a smaller bay for maintenance of pickups and smaller vehicles.

18.1.4 Guard House

The guard house is a simple, 200-sf security and first aid building, which will be located at the main gate (Figure 18-4).

18.1.5 Process Building

The process building is a 10,800-sf high-bay/low-bay building, with the 30-ft high-bay housing most of the process equipment and the low-bay housing the vault, refinery, and two small offices.

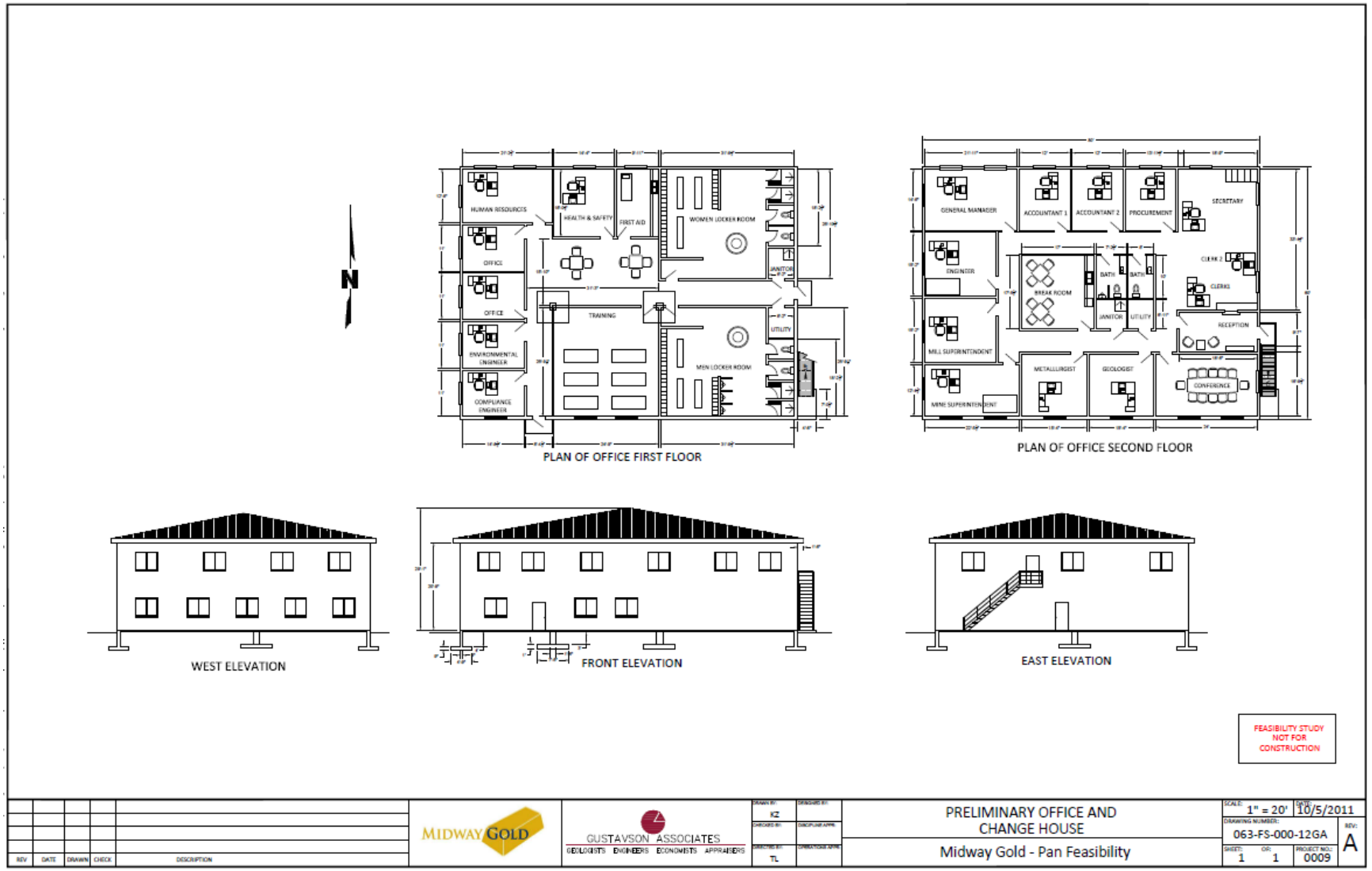


Figure 18-1 Office Building

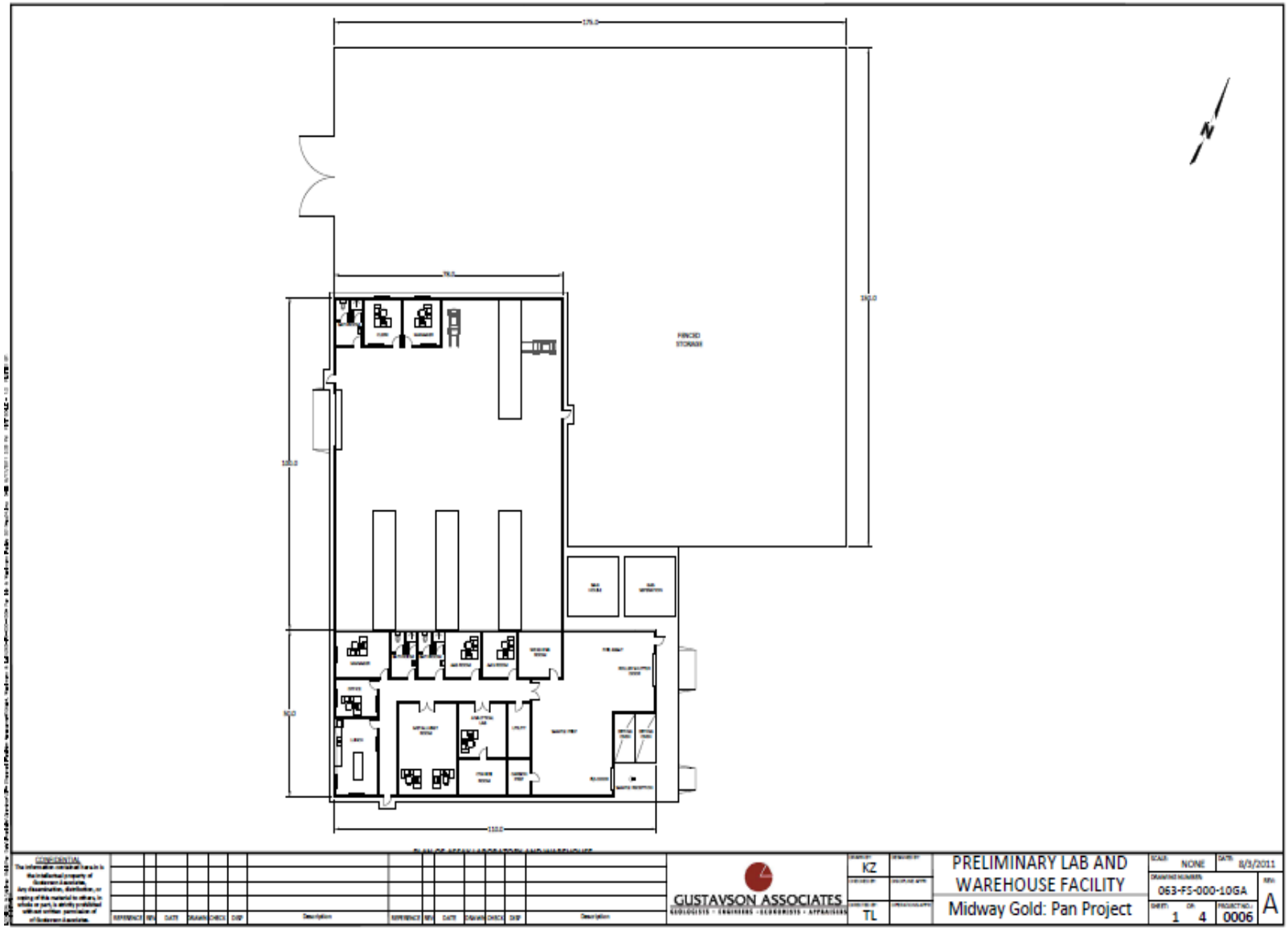


Figure 18-2 Lab and Warehouse Facility

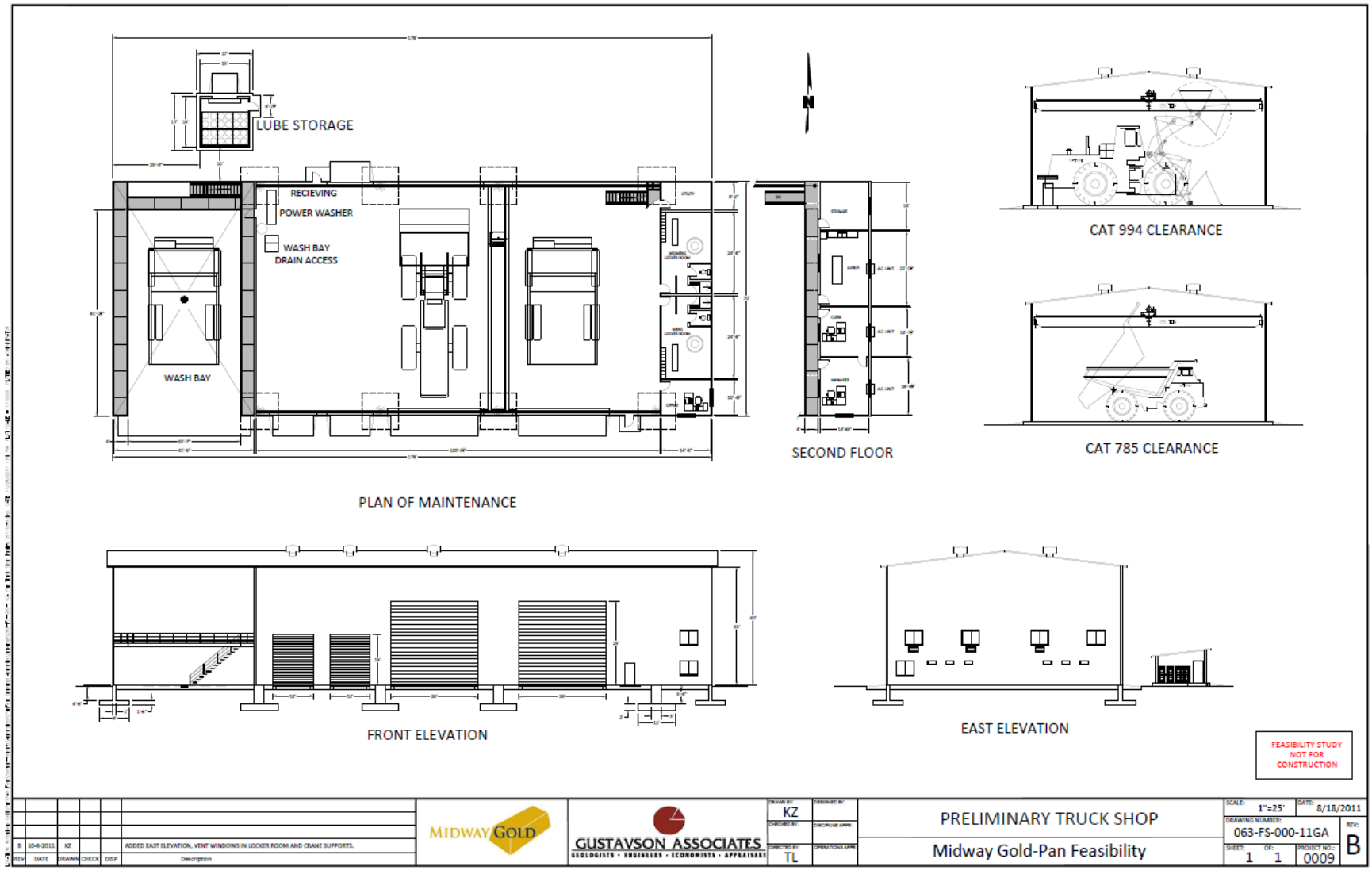


Figure 18-3 Truck and Maintenance Shop

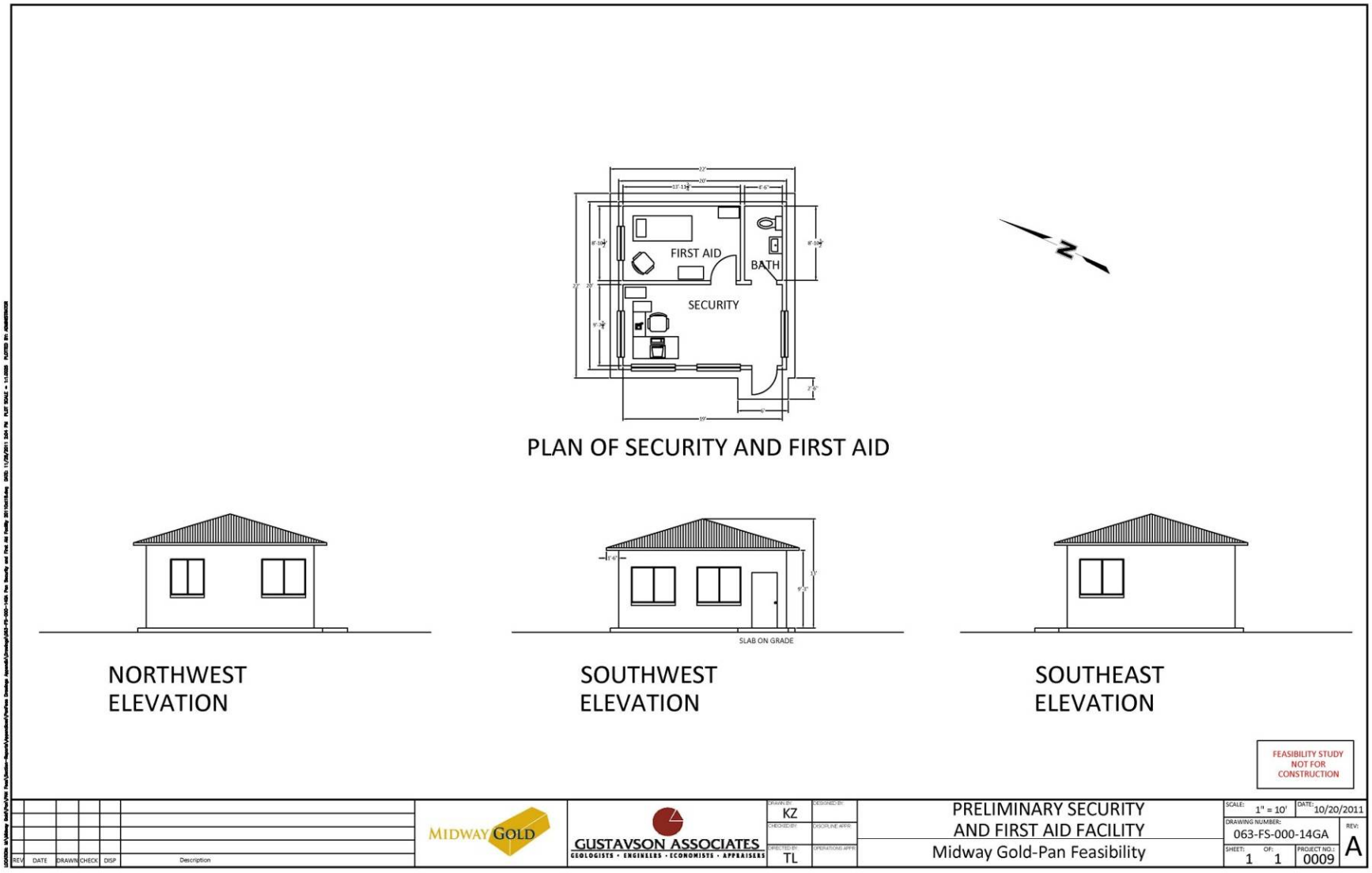


Figure 18-4 Guard House

18.2 Roads

The main access road to the mine will originate at US Highway 50, approximately 6 miles from the front gate of the property. The road will be constructed as a gravel embankment. The access road will be built prior to the start of on-site construction and widened prior to the beginning of operations. On-site roads will be constructed to provide for travel between the heap leach pads and the processing plant on the east side of the project area, and to the maintenance shop and crushing facility on the west side. Haul roads will be constructed during the initial development of the pits.

18.3 Security

The guard house at the main gate to the mine site will be manned around the clock. Standard security measures and operating procedures will be established to ensure the security of the site and gold product. The perimeter of the mine site will be fenced with 3-strand barbed wire to keep grazing cattle out. A security chain link fence with a barbed wire top will be installed around the two leach ponds and around the ADR plant.

18.4 Septic Systems

Three septic systems are currently planned on the Pan property: one for the office, one for the warehouse / laboratory, and a third system for the process plant. Portable toilets will be placed at the mining and crushing areas.

18.5 Water

MIDWAY leases water rights sufficient for 800 gpm production in the Pan project area. Drilling was accomplished on site during condemnation drilling, and a well which contacted water at 700+ feet below ground surface was airlift tested. The results indicate that the water meets drinking water standards, and generally has a temperature upwards of 80° F.

Two water wells will be drilled near the gate of the perimeter fence. These wells will be equipped with 250 hp submersible pumps, which will deliver water to the fire water storage tank, the barren leach pond, and the small potable water treatment system. Each well is sized to deliver 800 gpm. Maximum water usage for the Pan Project is summarized in Table 18-1. Although reservoir tests have not yet been completed, regional aquifer production indicates there will be sufficient water for mine development and operations.

Table 18-1 Maximum Water Usage

	Required Makeup GPM
Leach Pad	450
Roads	59
Conveyor	8
Agglomeration	283
Total	800

A small water treatment system will be installed to deliver potable water to the office, warehouse, process plant, and truck shop.

Fire water will be supplied to the office, warehouse/laboratory, truck shop, and process plant from a water storage tank located near the gate of the mine. Diesel driven pumps will deliver fire water via underground piping to fire hydrants located next to the various buildings.

18.6 Power

Expected initial power usage (diversified) at the mine and processing plant is approximately 5.6 megawatts. Based on discussions with the power company, Nevada Energy, there is sufficient power available in the local grid to supply the mine and processing plant. A 69 kV line will be built 7.38 miles down Strawberry Road to US 50, where a 69 kV/24.9 kV substation will be installed. The 24.9 kV line will follow the south side of US 50 to the site access road and into the plant substation. Another local mining company will pay for 1/3 of the cost of the 69 kV line and substation. The cost of the 24.9 kV line and site substation will be borne 100% by MIDWAY. Figure 18-5 shows the proposed alignment of the new power line.

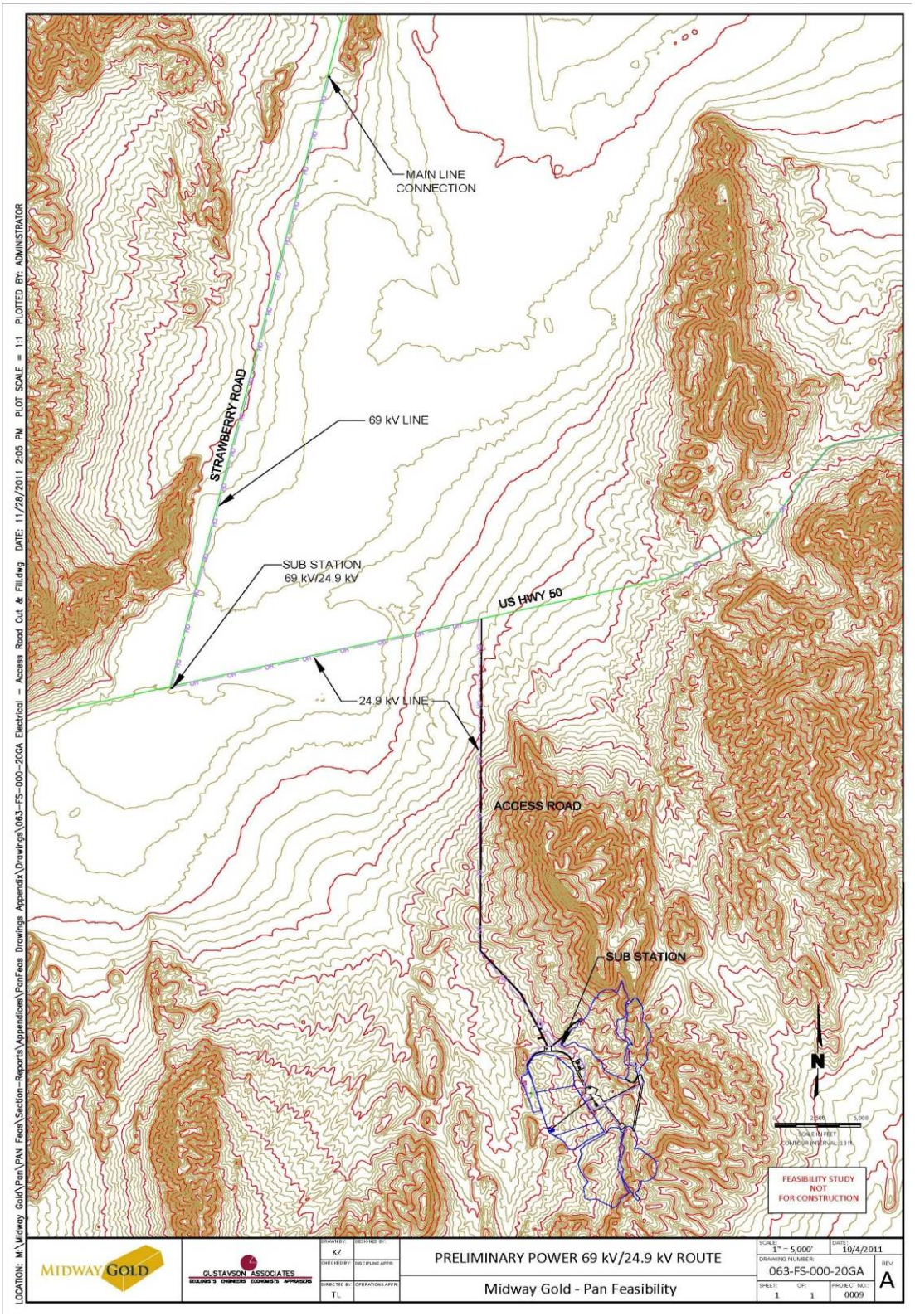


Figure 18-5 Powerline Alignment

Table 18-2 Pan Project Estimated Electrical Load

LOAD DESCRIPTION	VOLTAGE	INITIAL		FINAL-MINE DISTRIBUTION		FINAL-TRANSMISSION	
		CONNECTED LOAD kVA	DIVERSIFIED LOAD kVA	CONNECTED LOAD kVA	DIVERSIFIED LOAD kVA	CONNECTED LOAD kVA	DIVERSIFIED 75% LOAD kVA
PROCESSING AREA	480	906	906	906	906	906	679.5
CONE CRUSHERS	4160	1000	1000	1800	1800	1800	1350
ORE JUMP CONVEYORS	480	433	433	2433	2433	2433	1824.75
PRIMARY CRUSHER AREA	480	272	254.5	272	254.5	272	190.875
PRIMARY CRUSHER	4160	600	600	600	600	600	450
STORAGE AREA	480	608	590.5	608	590.5	608	442.875
GUARD SHACK	208/120	10	5	10	5	10	3.75
WATER WELLS	4160	500	500	500	500	500	375
OFFICE BUILDING	208/120	75	35	75	35	75	26.25
WAREHOUSE, LAB & TRUCK SHOP	208/120	200	100	200	100	200	75
BARREN PUMPS	4160	700	700	700	700	700	525
PROCESS PLANT PUMPS	480	369	369	369	369	369	276.75
PROCESS PLANT	480	200	150	200	150	200	112.5
TOTAL		5873	5643	**8673**	8443	8673	6332.25

Emergency power will be provided by a generator with sufficient power to run the pregnant leach and barren leach pumps in order to ensure that the leach ponds do not overflow. Minor emergency generator power will be delivered to the process plant to allow for an orderly shutdown in the event of a main supply power failure.

18.7 Fuel Depot

Diesel and gasoline will be purchased in bulk and stored on site at a refueling station. Diesel will be stored in a tank with capacity of 30,000 gal, and a fuel truck will be used to refill the mining equipment. Light duty diesel trucks will refill at the fuel station. Light duty gasoline trucks will similarly refuel at the fuel station on site.

All buildings will be heated with propane delivered from Ely and stored in tanks located on the project site.

18.8 Communications

Current plans call for a microwave-based communication system on site. This system will support internet, VOIP, and data communications necessary for daily operation of the mine, plant, and office.

19 MARKET STUDIES AND CONTRACTS

For the economic analysis, the three-year trailing average price of gold was used. This trailing average equated to $1200 per ounce. With gold trading at above $1700 per ounce at the time of preparation of this report, Gustavson feels that the three-year trailing average is an acceptable and conservative pricing to use in the economic analysis.

Gold is a fungible commodity bought and sold universally, and therefore no contracts were negotiated during the Feasibility Study phase of the project. However, it is anticipated that an off-take and smelting agreement will be established with Johnson Matthey or similar organization. Toward that end, discussions with Johnson Matthey were conducted during this study, and the following terms were proposed and were used in the economic analysis:

- Treatment Charge: $0.80 per ounce recovered
- Gold Return: 99.85% of assayed content
- Silver Return: 97.00% of assayed content
- Settlement: 15 working days from receipt
- Pricing: It is assumed that MIDWAY will arrange the pricing and payment with a bank or trading house. If Johnson Matthey is required to provide an early settlement within a few days of receipt, it would cost approx 3% per annum for the number of early days.

20 ENVIRONMENTAL STUDIES, PERMITTING AND SOCIAL OR COMMUNITY IMPACT

20.1 Permits Required

Midway will acquire the permits and authorizations presented in Table 20-1.

Table 20-1 Major Permits and Authorizations Required for Project Development

Permit/Approval	Granting Agency	Permit Purpose
Federal Permits Approvals and Registrations		
Plan of Operations/EIS (Plan of Operations submitted and deemed complete)	U.S. Bureau of Land Management	Prevent unnecessary or undue degradation associated with Plan of Operations, EIS to disclose environmental impacts and project alternatives. Requires financial assurance. Currently have Plan for exploration with amendment in progress
Explosives Permit	U.S. Bureau of Alcohol, Tobacco & Firearms	Storage and use of explosives
EPA Hazardous Waste ID No.	U.S. Environmental Protection Agency	Registration as a small-quantity generator of wastes regulated as hazardous
Notification of Commencement of Operations	Mine Safety & Health Administration	Mine safety issues, training plan, mine registration
Nationwide Section 404 Permit	U.S. Army Corps of Engineers	Installation of any required culverts on the access road.
Endangered Species Act	U.S. Fish and Wildlife Service	Only if project affects species listed as threatened or endangered (not anticipated to be necessary)
Federal Communications Commission	FCC	Frequency registrations for radio/microwave communication facilities
State Permits		
Air Quality Operating Permit	NV Division of Environmental Protection/Bureau of Air Pollution Control	Regulates project sources of air emissions. Will require compliance with the new
Mercury Operating Permit to Construct Air	NV Division of Environmental Protection/Bureau of Air Quality Planning/ Nevada Mercury Air Emissions Control Program	Requires use of NVMACT for all thermal units that have the potential to emit mercury
Reclamation Permit	NV Division of Environmental Protection/Bureau of Mining Regulation & Reclamation	Reclamation of surface disturbance due to mining and mineral processing includes financial assurance requirements. Site currently operates under Reclamation Permit No. 0228.

Permit/Approval	Granting Agency	Permit Purpose
Water Pollution Control Permit	NV Division of Environmental Protection/Bureau of Mining Regulation & Reclamation	Prevent degradation of waters of the state from mining, establishes minimum facility design and containment requirements. Site currently operates under WPCP NEV70010.
Petroleum-Contaminated Soil Management Plan	NV Division of Environmental Protection/Bureau of Mining Regulation & Reclamation	On-site treatment and management of hydrocarbon-contaminated soils
Solid Waste Class III Landfill Waiver	NV Division of Environmental Protection/Bureau of Solid Waste	On-site disposal of non-mining, non-hazardous solid wastes
General Stormwater Discharge Permit	NV Division of Environmental Protection/Bureau of Water Pollution Control	Management of site stormwater
Permit to Appropriate Water	NV Division of Water Resources	Water appropriation
Permit to Construct Impoundments	NV Division of Water Resources	Design and construction of a tailings embankment or other structures with a crest height 20 feet or higher, as measured from the downstream toe to the crest, or that will impound 20 acre-feet or more
Industrial Artificial Pond Permit	NV Department of Wildlife	Ponds containing chemicals directly associated with the processing of ore.
Liquefied Petroleum Gas License	NV Board of the Regulation of Liquefied Petroleum Gas	Tank specification and installation, handling, and safety requirements
Potable Water System Permit	NV Bureau of Safe Drinking Water	Water system for drinking water and other domestic uses (e.g., lavatories)
Radioactive Materials License	NV Bureau of Safe Drinking Water	Nuclear flow and mass measurement devices if used in the mineral processing facilities
Septic Treatment Permit Sewage Disposal System	NV Division of Environmental Protection/Bureau of Water Pollution Control	Design, operation, and monitoring of septic and sewage disposal systems
Hazardous Materials Storage Permit	Nevada Fire Marshall	Hazardous materials safety
Local Permits		
Building Permits	White Pine County Building Planning Department	Continued Use
Conditional Special Use Permit	White Pine County Building Planning Department	Continued Use
County Road Use and Maintenance Permit	White Pine County Building Planning Department	Use and maintenance of county roads

The 2004 Plan of Operations (POO) was submitted on behalf of Castleworth for exploration drilling at the project site, and an Environmental Assessment (EA) was undertaken as part of the permitting process. The EA culminated in a Finding of No Significant Impact (FONSI) and approval to disturb up to 25 acres for drill pads and drill roads. The FONSI was signed in April 2004.

An amendment to the 2004 exploration plan was submitted in 2011 on behalf of Midway, proposing an additional 75 acres of disturbance to construct a new access road, additional drill pads, and spur roads. An EA for that amendment was completed in April 2011 and was approved with a FONSI in August 2011.

Midway has prepared a Mine Plan of Operations (MPO) using the most up-to-date information available. This MPO was deemed to be administratively complete by the BLM in November, 2011. Midway will continue to collect information during drilling and geological exploration activities over the life of the mine, and will amend or revise the MPO as necessary to incorporate new pertinent information. Plans for the first seven years of the 13-year mine life are based on exploration data to date and include leaching simultaneous placement of waste rock waste. Plans for the remaining six years of mine life are based on professional experience and estimates or assumptions of pit dimensions, ore and waste rock volumes, and waste rock characterization.

The MPO proposes to incorporate the authorized exploration disturbance into proposed mining activities. The MPO plan area will encompass the existing exploration area, as well as a mine area which will include:

- Two main open pits, the North Pan and the South Pan pits
- Four satellite pits: the Black Stallion, North Syncline, Syncline, and South Syncline pits
- Crushing facilities and associated stockpiles
- Two waste rock disposal sites
- Heap leach pad, conveyors, processing facilities, and ponds
- Water supply wells and delivery/storage system
- Haul and secondary roads

The permitting schedule for the Pan Project will be dictated by NEPA process requirements, which typically include at least one year of baseline studies and public review followed by comment periods for scoping and production of draft EIS documents. Completion of an EIS for a new mining project typically requires between 18 and 24 months. With the exception of air permits, the remaining major permits for the project would likely require a NEPA Record of Decision (ROD) prior to permit approval. The air permit process allows a project to be built according to set standards and then an inspection requested, rather than requiring design approval prior to construction. For this reason, preliminary approval of air permits can often be obtained before the NEPA process is complete.

21 CAPITAL AND OPERATING COSTS

21.1 Capital Cost Estimate

The capital cost estimate for the Pan Project includes all quoted equipment costs, quoted installation costs, and quantity takeoffs for major components. A breakdown of the total estimated initial capital cost is presented in Table 21-1.

Table 21-1 Pan Project Capital Cost Estimate

Feasibility Capital Costs	Estimated Cost
Mine Mobile Equipment	$ 25,614,600
Mine Development	$ 2,000,000
Mine Buildings	$ 1,903,800
Primary Crushing - Edge of Pit to Stockpile	$ 5,604,700
Ore Circuit - From Stockpile to Leach Pad	$ 10,762,800
Gold Recovery Plant	$ 7,290,500
Plant Mobile Equipment	$ 281,600
Leach Pad Installation	$ 6,737,000
Process Ponds	$ 3,623,000
Storm Water Diversion	$ 1,497,200
Infrastructure	$ 13,603,500
Owner's Costs	$ 4,768,800
Reclamation Bond, Facilities	$ 500,000
Subtotal	**$ 84,187,500**
Contingency	$ 6,765,800
Working Capital	$ 8,214,400
Total Initial Capital	**$ 99,167,700**

21.1.1 Basis

The capital cost estimates were generated primarily from quotes from equipment suppliers and contractors. Excluding contingency and working capital, 73% of the estimated costs are from quotes. In-house take-offs and estimated costs from previous construction projects were used for the remaining items. All individual costs include the appropriate sales tax component.

21.1.2 Mine Development

Gustavson has included an allowance for pioneering, clearing, grubbing, and initial haul road construction in the capital cost estimate. The estimated quantities and costs associated with mine development tasks are presented in Table 21-2.

Table 21-2 Pan Project Mine Development

Description	# Units	Unit	$/Unit	Cost
Mine Development				
Pioneering, Clearing and Grubbing	1	LS	$500,000	$500,000
Haul Road Construction	15,000	Ft	100	1,500,000
Total Mine Development Capital				**$2,000,000**

21.1.3 Mine Equipment

Mobile mine equipment requirements were calculated based on haulage cycle times, truck loading parameters, and the required production schedule. Equipment required for the start-up of the mine is listed in Table 21-3. The quotes used for rotary drills are for Atlas Copco DM45's, the front shovel quote is for a Bucyrus (formerly O&K) RH120E, and the remaining major equipment was quoted by Caterpillar. The quoted equipment includes costs for fire suppression systems.

Table 21-3 Mine Mobile Equipment

Description	# Units	Unit	$/Unit	Cost
Mine Mobile Equipment				
Rotary Drill 6.75" - 600HP	2	Ea	$1,023,400	$2,046,800
Front Shovel - 21.6 yd3	1	Ea	5,444,900	5,444,900
Loader - 15 yd3	1	Ea	2,311,300	2,311,300
Rear Dump Trucks - 150 ton	4	Ea	2,818,700	11,274,800
Rubber Tire Dozer - 554HP	1	Ea	1,095,400	1,095,400
Dozer - 464HP	1	Ea	1,053,500	1,053,500
Graders 16'	1	Ea	926,700	926,700
Water Truck 10,000 gal	1	Ea	940,600	940,600
Maintenance Service Truck & Fuel Lube Truck	2	Ea	80,600	161,200
Excavator - 1.2 yd3	1	Ea	211,800	211,800
Light Plants (10 KW)	6	Ea	23,700	142,200
Pumps 40 HP	1	Ea	5,400	5,400
Total Mining Mobile Equipment Capital				**$25,614,600**

21.1.4 Mine Buildings

The buildings and infrastructure required for the mine department will consist of 10,500 sf truck shop and a fuelling station. The mine dry will be included inside of the administration building. The mine maintenance shop will consist of two large bays for equipment repairs, a large equipment wash bay, and two smaller bays for light vehicles. Mine building details are summarized in Table 21-4.

Table 21-4 Mine Buildings

Description	# Units	Unit	$/Unit	Cost
Truck Shop (w/tools 100K allowance)	1	LS	$1,796,300	$1,796,300
Fuel Station	1	LS	107,500	107,500
Total Mine Buildings Capital				**$1,903,800**

21.1.5 Facilities and Infrastructure

The major facilities planned for the Pan Project include:

- Office building– 2 story, 9600 sf
- Warehouse / Laboratory – 13,050 sf
- Truck shop– 10,500 sf
- Guard house – 200 sf
- Process building – high bay / low bay, total 10,800 sf

The capital cost associated with the Process Building is included in the capital cost estimated for the gold recovery process.

The water system at Pan will consist of two production wells, a 180,000 gallon storage tank, delivery pipelines, a fire water diesel-driven pump loop, and fire hydrants.

Power supply installation costs will include 2/3 of the cost of construction of a 69 kV line over a distance of 7.38 miles along Strawberry Road to US 50, where a 69 kV/24.9 kV substation will be installed, plus the cost of a 24.9 kV line from the substation to the Pan Project site. MIDWAY will pay for 2/3 of the cost of the 69 kV line and substation, and another local mining company will pay for the other 1/3 of the cost. The estimate for equipment and installation was prepared by Hanlon Engineering. The capital cost for site power distribution was developed by Electrical Consultants Inc. (ECI) from one-line diagrams and quotes on transformers and motor control centers. The estimated capital cost for installation of on-site power distribution is $3,652,300.

The main access road will include 5.78 miles of new gravel surface. The road will be built prior to the start of construction and expanded during construction. An estimated construction cost of $1,788,000 was included for the cost of expanding the road. On-site roads are expected to require approximately 2.3 miles of new construction, at a cost of $147,688 per mile, for a total of $339,700.

Diesel and gas storage will consist of two tanks, delivery pumps, and a containment berm. Propane will be used to heat the office, the warehouse/laboratory, the guard house, truck shop,

and the process building. Propane tanks will be installed at each location, and the tanks and associated piping and valves have been included in the capital cost estimate.

Communication for the site will be via a VOIP and high-speed internet system. The total estimated cost for that system is $118,500.

Three separate septic systems are planned for the Pan Project. One system will support the office building, one system will support both the truck shop and warehouse complex, and one system will support the process building area. Portable toilets will be used in the mining area.

The perimeter of the mine site will be fenced with 3-strand barbed wire to keep grazing cattle out. A security chain link fence with a barbed wire top will be installed around the two leach ponds and around the ADR plant.

The capital costs associated with infrastructure, facilities, and buildings are summarized in Table 21-5.

Table 21-5 Pan Project Infrastructure, Facilities, and Buildings

Description	# Units	Unit	$/Unit	Cost
Infrastructure				
Wells	1	Ea	$110,000	$110,000
Pumps	2	Ea	21,500	43,000
Piping, includes installation	3,000	ft	14.81	44,400
Piping installation	0	Day	1,620	0
Pressure Tank	1	Ea	16,100	16,100
Fire Water Storage Tank on site	1	Ea	283,300	283,300
Fire Loop Piping & Equipment	1	Ea	367,100	367,100
Electrical / Controls	1	Ea	10,800	10,800
Installation	1	Ea	50,000	50,000
69 KV line	38,966	ft	31.59	1,230,900
24.9 KV line	48,998	ft	28.84	1,413,100
Substation (69/25)	1	Lot	537,500	537,500
Substation (25/480)	1	Lot	161,300	161,300
Emergency Generator	1	Lot	118,300	118,300
Site Power Distribution	1	Lot	3,652,300	3,652,300
Main Road access	5.78	Miles	309,343	1,788,000
On-Site Road Construction	2.3	Miles	147,688	339,700
Propane Tank & piping	1	Ea	51,500	51,500
Communications	1	Ea	118,500	118,500
Warehouse/Laboratory	16,500	sf	85.40	1,409,100
Equipment/Furnishings	1	Lot	53,800	53,800
Plant Air Systems	1	LS	53,800	53,800
Office	5,000	sf	209.50	1,047,500
Laboratory Equipment	1	LS	458,400	458,400
Sewage System	1	LS	46,400	46,400
Guard House / Security Facility	1	LS	51,500	51,500
First Aid Facility	1	LS	25,800	25,800
Security Fencing	1	LS	51,500	51,500
Diff GPS - Survey	1	LS	69,900	69,900
Total Infrastructure Capital				**$13,603,500**

21.1.6 Primary Crushing and Coarse Ore Storage

The feasibility analysis for the Pan Project assumes that a Lippman model 3862 Mobile Jaw crusher will be used for primary crushing. Installation will include the 38-inch by 62-inch jaw crusher, a rock-box dump box, a 62-inch by 28-inch vibrating grizzly, feeders and conveyors to

deliver the crushed and bypass material to a transfer conveyor, a rock breaker, and a control house. The transfer conveyor moves the crushed material to the 2,798-foot overland conveyor, which delivers crushed ore to the stockpile. The coarse ore from the overland conveyor is delivered to a tripper conveyor, which lifts the ore into the stockpile building and unloads onto the stockpile. The stockpile has both live and dead storage, and is contained in a "clear span" building. The live storage ore is delivered to pan feeders through three separate chutes. The pan feeders feed the takeaway conveyor, which delivers the ore to the secondary crushing area.

The total capital cost for equipment associated with the primary crushing and coarse ore storage material handling area is summarized in Table 21-6.

Table 21-6 Primary Crushing and Material Handling

Description	# Units	Unit	$/Unit	Cost
Primary Crushing - Edge of Pit to Stockpile				
Jaw primary	1	Ea	$1,014,500	$1,014,500
Oil lube pump, included in Jaw cost	1	Ea	0	0
VGF included above	1	Ea	0	0
Rock Box	1	Ea	537,500	537,500
Hydraulic Leveling Jacks (includes 6)	1	Ea	40,300	40,300
Primary Jaw MCC &VSD	1	Ea	52,800	52,800
Rock Breaker	1	Ea	215,000	215,000
Primary Jaw Control House	1	Ea	107,500	107,500
Hydraulic Toggle Assembly	1	Ea	69,900	69,900
Jaw Crusher Transfer Conveyor 100-CV 2	1	Ea	224,300	224,300
Ore Overland Conveyor 100-CV 2	1	Ea	1,581,400	1,581,400
Tripper Incline 200-CV 1	1	Ea	307,500	307,500
Tripper Conveyor 200-CV 2	1	Ea	385,300	385,300
Loader Belt Feeder 200-LF	1	Ea	137,200	137,200
Feeder Tunnel 200-FT	1	Ea	129,700	129,700
Tunnel Conveyor 200-CV 3	1	Ea	264,400	264,400
Stockpile Building	1	Ea	361,600	361,600
Belt Feeders	3	Ea	58,600	175,800
Total Mining Material Handling Capital				**$5,604,700**

21.1.7 Secondary Crushing, Agglomeration and Stacking

Secondary crushing will begin with production from the South Pan pit, and will consist of screening and crushing to further reduce the ore from nominal 12-inch size to 80% passing 1.5-inches. The secondary crushed ore is fed through an agglomerator and onto the short overland conveyor, where it is delivered to a string of grasshopper conveyors. The grasshopper conveyors then deliver the ore to the telestacker on the leach pad. The capital cost of equipment required for the secondary crushing facility, agglomerator, and stacking area is shown in Table 21-7.

Table 21-7 Secondary Crushing and Stacking

Description	# Units	Unit	$/Unit	Cost
Ore Circuit - From Stockpile to Leach Pad				
Screen Feed Conveyor 300-CV 1	1	Ea	$246,000	$246,000
Screen Tower 300-ST 1	1	Ea	46,800	46,800
Screen Discharge Conveyor 300-CV 2	1	Ea	273,900	273,900
Surge Bin 300-SB 1	1	Ea	144,400	144,400
Transfer Conveyor 300-CV 3	1	Ea	57,700	57,700
Crusher Tower 300-CT 1	1	Ea	52,100	52,100
Return Conveyor 300-CV 4	1	Ea	251,500	251,500
Secondary Cone Crusher	1	Ea	2,088,300	2,088,300
Agglomerator Feed Conveyor 300-CV 2	1	Ea	186,400	186,400
Double Deck Screen	2	Ea	244,800	489,600
Belt Metal Detector, 54"	1	Ea	13,400	13,400
Belt Weigh Scale, 48"	1	Ea	15,300	15,300
Cement Storage Silo package	1	Ea	179,300	179,300
Lime Storage Silo package	1	Ea	226,500	226,500
Agglomerator Discharge Conveyor 400	1	Ea	143,300	143,300
Flat Grade Jump Conveyor 400-CJ 1	26	Ea	57,900	1,505,400
Feed Conveyor 400-CV 3	1	Ea	62,800	62,800
Telestacker Conveyor	1	Ea	496,200	496,200
Concrete Installation	3920	CuYd	248.29	973,300
Installation of Crusher and Conveyor	1	Ea	1,311,000	1,311,000
Allen Bradley Control System	1	Ea	225,800	225,800
Agglomerator Unit – Skid- Mounted	1	Ea	1,773,800	1,773,800
Total Process Material Handling Capital				**$10,762,800**

When production switches to the North pit a tertiary crusher will be added to the secondary circuit to crush the North ores to 0.5 in. Table 21-8 lists the costs associated with installing the tertiary crusher and associated infrastructure and relocating the primary crushing circuit from the South pit to the North pit.

Table 21-8 Secondary Tertiary Crusher

Description	# Units	Unit	$/Unit	Cost
Tertiary Crusher & Ancillary Facilities				
Crusher Tower 300-CT 1	1	Ea	$52,100	$52,100
Return Conveyor 300-CV 4	1	Ea	251,500	251,500
Tertiary Crusher	1	Ea	,088,300	2,088,300
Install Crusher	1	Ea	357,000	357,000
Retaining Wall for Primary - North Pit	1	Ea	238,000	238,000
Relocate and Install Conveyor to North Pit	1	Ea	178,000	178,000
Total Tertiary Crusher & Ancillary Facilities				**$3,164,900**

21.1.8 Leaching

Leach pads were designed and the associated costs estimated by SRK with input from Gustavson. Sufficient leach pad area (2.5 million square feet) was included in the initial capital cost for the first 17 months of operation. Expansion of the leach pad is planned during the first summer of operation, and again after year 3, to attain the ultimate leach pad size of 12.8 million square feet. Leach pad capital costs are summarized in Table 21-9.

Table 21-9 Leach Pad Cost Estimate

Description	# Units	Unit	$/Unit	Cost
Leach Pad Installation				
Mobilization/demobilization	1	LS	$120,000	$120,000
Salvage and stockpiling of growth media	119,000	CU YD	4.50	535,500
Subgrade preparation	195,000	CU YD	1.50	292,500
Cut to fill - site grading	61,200	CU YD	2.50	153,000
Structural fill	261,000	CU YD	1.64	428,000
Haul and place underliner (1-foot) - Mine Operations	472,160	Ton	1.25	590,200
Bentonite amendment of underliner	2,520,000	SQ FT	0.75	1,890,000
Excavate and backfill anchor trench	6,800	LF	3.00	20,400
Supply and install 80-mil HDPE liner	2,520,000	SQ FT	0.52	1,297,800
Supply and install 4-inch perforated corrugated HDPE pipe	113,000	LF	1.37	154,800
Supply and install 8-inch perforated corrugated HDPE pipe	11,200	LF	5.15	57,700
Supply and install 12-inch solid wall corrugated HDPE pipe	7,300	LF	8.34	60,900
Supply and install flumes, valves, and controls	1	LS	51,500	51,500
Misc. fittings (tees, reducers, wyes, adaptors)	1	LS	25,800	25,800
Haul and place overliner (3 feet) - Mine Operations	527,000	Ton	1.25	658,800
Haul and place random fill for surface drainage	180,000	CU YD	1.00	180,000
Miscellaneous Costs				220,100
Total Leach Pad Installation Capital				**$6,737,000**

21.1.9 Process Ponds

Capital costs for the process ponds were estimated for the final pond capacity, and include sufficient volume for the maximum leaching capacity of 5000 gpm. Allowance for runoff

containment is included in the design. Capital costs associated with the process ponds are presented in Table 21-10.

Table 21-10 Process Pond Cost Estimate

Description	# Units	Unit	$/Unit	Cost
Process Ponds				
Mobilization/demobilization	1	LS	$40,000	$40,000
Salvage and stockpiling of growth media	16,000	CU YD	3.15	50,400
Excavation and embankment construction	75,000	CU YD	4.66	349,500
Subgrade preparation and grading	16,000	CU YD	2.15	34,400
Haul, place, grade, and compact liner bedding (6")	5,600	CU YD	5.95	33,320
Bentonite amendment of underliner (sumps only)	1,000	SQ FT	1.50	1,500
Excavate and backfill anchor trench	3,100	LF	3.00	9,300
Supply and install 60-mil HDPE secondary liner	300,000	SQ FT	0.46	139,200
Supply and install geonet	300,000	SQ FT	0.33	99,000
Supply and install 80-mil HDPE primary liner	300,000	SQ FT	0.52	154,500
Install sump riser piping	150	LF	15.45	2,300
Install sump geotextile	1,700	SQ FT	0.26	400
Place sump drainage gravel	30	CU YD	9.00	300
Excavate solution channel	500	CU YD	2.50	1,300
Solution channel subgrade preparation	756	SQ FT	2.59	2,000
Supply and install 80-mil HDPE liner for solution channel	6,800	SQ FT	0.52	3,500
Excavate and backfill solution channel anchor trench	300	LF	3.00	900
Supply and install 24-inch HDPE pipe for solution channel	1,000	LF	118.34	118,300
Bird balls and associated costs				2,582,880
Total Process Ponds Capital				**$3,623,000**

21.1.10 Storm Water Diversions

SRK's design for storm water diversions is based on the 100-year, 24-hour storm event. The diversions will be built to exist for the life of the mine. The estimated costs for the storm water diversions are presented in Table 21-11.

Table 21-11 Storm Water Diversions

Description	# Units	Unit	$/Unit	Cost
Storm Water Diversion				
Mobilization/demobilization	1	LS	$40,000	$40,000
N RDA channel; excavation & grading (includes stockpiling)	12,500	CU YD	3.60	45,000
N RDA channel; screen, haul, and install rip rap	6,200	CU YD	23.06	143,000
HLP-E channel; excavation & grading (includes stockpiling)	14,700	CU YD	3.60	52,900
HLP-E channel; screen, haul, and install rip rap	9,930	CU YD	23.06	229,000
HLP-S channel; excavation & grading (includes stockpiling)	14,230	CU YD	3.60	51,200
HLP-S channel; screen, haul, and install rip rap	8,910	CU YD	23.06	205,500
S RDA-E channel; excavation & grading (includes stockpiling	3,870	CU YD	3.60	13,900
S RDA-E channel; screen, haul, and install rip rap	1,160	CU YD	23.06	26,700
S RDA-S channel; excavation & grading (includes stockpiling	450	CU YD	3.60	1,600
Storm Water collection Ponds				688,400
Total Storm Water Diversion Capital				**$1,497,200**

21.1.11 Gold Recovery

Gold recovery facilities at Pan include an ADR plant, gold refinery, and vault. Summit Valley and WGC Group prepared the capital supply and installation cost for the ADR plant and

building. An identical plant was designed, built, and installed by Summit Valley and WGC, and the completed engineering and capital cost estimate presented here is based on the previous installation, updated to today's dollars. The total gold recovery process area capital cost is shown in Table 21-12.

Table 21-12 Gold Recovery Process

Description	# Units	Unit	$/Unit	Cost
Gold Recovery Plant				
Carbon Col - 14.5' dia, w/ pumps - 5000 gpm	5	ea	$245,900	$1,229,500
Acid Wash (stainless steel)	1	ea	148,600	148,600
Stripping Circuit - 200 lb	1	ea	120,700	120,700
Heater Skid	1	ea	277,400	277,400
Electrowinning	1	ea	382,200	382,200
Carbon Handling	1	ea	197,100	197,100
Carbon Regeneration	1	ea	536,100	536,100
Refinery	1	ea	456,700	456,700
Reagents Handling	1	ea	155,000	155,000
Piping and Valves	1	lot	304,600	304,600
Electrical	1	lot	327,200	327,200
Engineering	1	lot	387,200	387,200
Data Logging System	1	ea	68,500	68,500
Freight	1	lot	165,400	165,400
Spare Parts See First Fills	1	lot	200,000	0
Construction Management	1	lot	216,000	216,000
Installation	1	lot	1,560,000	1,560,000
Startup Assistance	1	lot	54,000	54,000
Process Plant Leak Detection	1	ea	74,200	74,200
Building	1	ea	630,100	630,100
Total Process Material Handling Capital				**$7,290,500**

The mobile equipment requirements for the plant are listed in Table 21-13. The pickups for the plant are included in the administration capital.

Table 21-13 Plant Mobile Equipment

Description	# Units	Unit	$/Unit	Cost
Plant Mobile Equipment				
Backhoe, with Front End Loader	1	ea	$117,100	$117,100
Crane, 35 ton	1	ea	$107,500	$107,500
Flatbed truck	1	ea	$57,000	$57,000
Total Plant Mobile Equipment Capital				**$281,600**

21.1.12 Owner's Costs

As with any project, there are costs that are borne by the owner (MIDWAY) which are separate and distinct from the cost of construction and installation. The estimated owner's costs for the Pan Project are based in part on previous projects where the owner's costs were uniquely identified and tracked. The identified costs include items such as computers, office equipment and supplies, training costs, owner's staff costs during construction and startup, consulting costs, the cost of vendors' representatives, recruitment, safety supplies, and on-site office costs. Estimated owner's costs are presented in Table 21-14.

Table 21-14 Owner's Costs

Description	# Units	Unit	$/Unit	Cost
Construction Phase Projects				
Construction Contractors Mob/Demob	1		$127,000	$127,000
Diesel Fuel Purchases	1		35,000	35,000
Electric Power Purchases	1		100,000	100,000
Potable Water Purchases	1		16,100	16,100
Computers	1		154,300	154,300
Site Laboratory Operation - in capital period	1		171,000	171,000
Safety Supplies	1		164,500	164,500
Mine Training, incl Salaries Wages	1		433,700	433,700
Site Environmental Training Programs	1		25,800	25,800
Site Environmental Costs - in capital period	1		80,900	80,900
Site Safety/Security Costs - in capital period	1		48,200	48,200
Site G&A Operating Costs - in capital period	1		220,500	220,500
Pickups for Mine, Plant, G&A	16		32,300	516,800
Emergency Vehicle	1		69,900	69,900
Miscellaneous Construction Materials Purchase	1		32,300	32,300
Small Tools Purchases	1		96,800	96,800
Travel/Housing/Accommodations	1		142,000	142,000
Recruitment	1		75,000	75,000
Vendor Rep Services and Equipment Testing	1		160,000	160,000
Site Construction Insurance	1		160,000	160,000
Engineering - Buildings	1		429,000	429,000
Engineering - Mining	1		400,000	400,000
Consulting Costs - Construction Management	1		396,000	396,000
Consulting Costs - Geotechnical/Environmental	1		264,000	264,000
Consulting Costs - Other	1		315,000	315,000
Project Construction QA/QC	1		135,000	135,000
Total Owner's Construction Phase Projects				**$4,768,800**

21.1.13 EPCM

Engineering, procurement, and construction costs are included in the capital cost estimates described in the individual sections above.

21.1.14 Working Capital

Working capital is estimated for the first 2 months of operation in conjunction with first fills and consumable supplies. Estimated working capital costs are shown in Table 21-15.

Table 21-15 Working Capital Costs

FIRST FILLS	tons	gallons	pounds	$/unit	extension
Lime	50		100,000	$0.099	$9,900
Cyanide	20		40,000	$1.30	$52,000
Cement	50		100,000	$0.071	$7,100
Diesel		10,000		$3.00	$30,000
Gasoline		1,000		$3.00	$3,000
Carbon	50		100,000	$1.15	$115,000
Other					$16,000
ANFO	40		80,000	$0.30	$24,000
Caps	1000			$3.00	$3,000
Boosters	1000			$4.58	$4,580
Tires					$100,000
Warehouse Supplies					$1,100,000
Subtotal- First Fills and Consumables					**$1,464,580**
Working Capital - 2 months of operating costs					**$6,749,869**
Total Operating Capital					**$8,214,449**

21.1.15 Sustaining Capital

Table 21-16 lists additional mine equipment that will be required to meet production requirements during year 2 of the schedule, as the total tons mined increases above 50,000 tpd.

Table 21-16 Additional Mine Equipment

Description	# Units	Unit	$/Unit	Cost
Additional Mine Mobile Equipment				
Rotary Drill 8 inch 475HP	1	Ea	$1,023,400	$1,023,400
Rear Dump Trucks - 150 ton (785)	1	Ea	2,818,700	2,818,700
Total Additional Mine Mobile Equipment				**$3,842,100**

Sustaining Capital was calculated based on major rebuild items whose costs are capitalized and removed from operating costs. The sustaining capital is based on each individual piece of equipment's cumulative operating hours, and an hourly rate for replacing the component. The hourly rates were derived from previous project experience and/or the Mine and Mill cost handbook published by InfoMine. Since the equipment is new and will be under warranty for at least the first twelve months, the component costs don't start accruing until 7,500 hours of operation are cumulated. The sustaining capital costs are also not accrued for the last twelve months of operation, as the major components will not be changed out. Table 21-17 summarizes the sustaining capital cost for scheduled major mining equipment rebuilds.

Table 21-17 Mine Sustaining Capital Major Rebuilds

Department	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8
Mine G&A	-	20,453	52,296	111,689	120,989	122,910	122,643	101,540	-
Drilling	-	91,840	172,257	153,403	158,443	173,011	173,588	138,008	-
Haulage	-	304,978	850,410	738,702	674,666	922,618	943,529	780,836	-
Loading	-	129,570	311,121	315,865	336,802	491,476	563,371	334,007	-
Roads & Dumps	-	106,161	398,889	398,559	400,576	405,434	404,973	338,905	-
Grand Total	**-**	**653,002**	**1,784,973**	**1,718,218**	**1,691,476**	**2,115,449**	**2,208,104**	**1,693,296**	**-**

21.1.16 Contingency

Contingency was developed using a Monte Carlo simulation approach. Each capital cost item was reviewed to determine its likely low cost and likely high cost. This range of capital costs was then built into a simulation using Crystal Ball software, and 10,000 iterations of the estimate were run. The resulting graph, Figure 21-1, was then used to determine the appropriate level of contingency based upon a 90% confidence level. A contingency level of 8% was included as a result of this analysis.

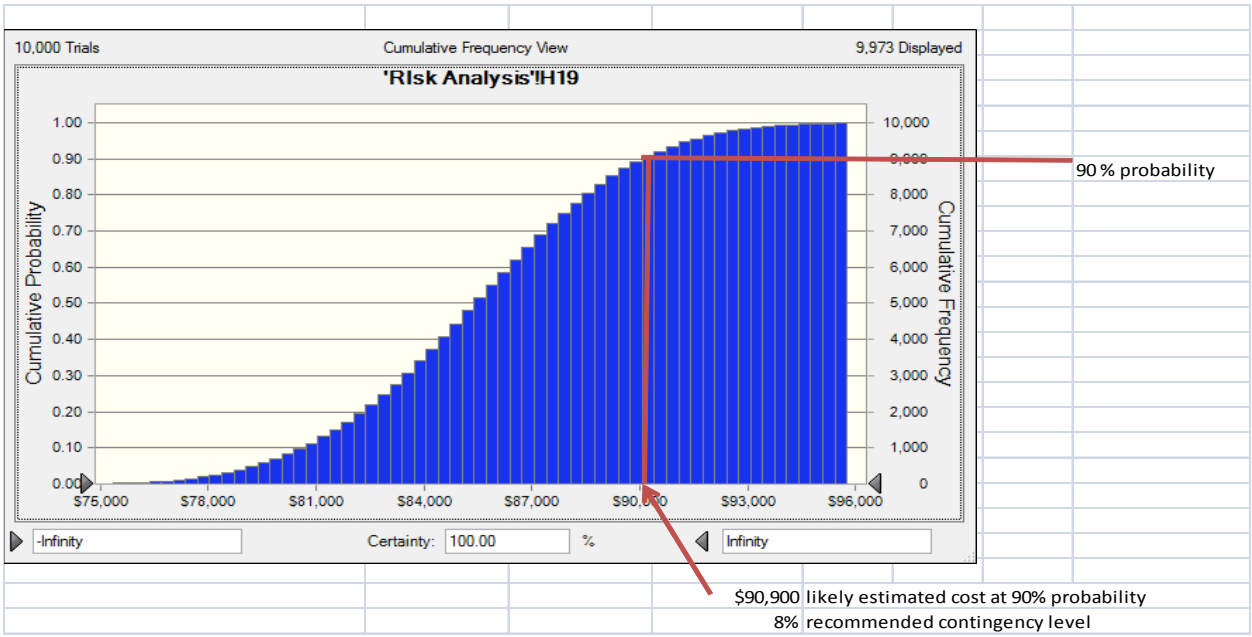


Figure 21-1 Contingency Calculation

21.2 Operating Cost Estimate

21.2.1 Project Cost and Basis

The Pan Project's cash operating costs are estimated to be $6.54 per ton of ore processed including mining, processing, general and administrative, net proceeds of mines taxes, property taxes and a 5% contingency on operating costs. The unit costs summarized in Tables 21-18 and 21-19 are based on annual ore production of 6,205,000 tons (17,000 t/d) and 365 days of operation.

Table 21-18 Pan Operating Cost Summary by Cost Type

Operating Cost	Life of Mine Cost	Average Annual cost	Cost/ ton ore	Cost/ ton mined	Cost/ oz Au Produced
Mine - Open Pit					
Production Equipment - Cost	$52,501,000	$6,054,600	$0.99	$0.35	$80.91
Support Equipment - Cost	10,960,000	1,263,900	0.21	0.07	16.89
Materials/Other Requirements	27,168,000	3,133,100	0.51	0.18	41.87
Hourly Personnel	45,702,000	5,270,600	0.86	0.31	70.43
Salaried Personnel	11,589,000	1,336,500	0.22	0.08	17.86
Total Mining	$147,920,000	$17,058,700	$2.78	$1.00	$227.97
Processing Plant					
Reagents	$66,591,000	$7,679,500	$1.25		$102.63
Other operating costs	31,194,000	3,597,400	0.59		48.07
Energy	6,593,000	760,400	0.12		10.16
Hourly Personnel	24,600,000	2,837,000	0.46		37.91
Salaried Personnel	8,465,000	976,300	0.16		13.05
Total Processing	$137,443,000	$15,850,600	$2.58		$211.82
General & Administrative					
General Management	$12,634,000	$1,457,100	$0.24		$19.47
Services and Supplies	7,147,000	824,200	0.13		11.01
Total General & Administrative	$19,781,000	$2,281,300	$0.37		$30.49
Net Proceeds of Mines/Property Tax	$27,892,000	$3,216,600	$0.52		$42.99
Operating Cost - Contingency 5%	$15,257,000	$1,759,500	$0.29		$23.51
Total Operating Cost	$348,293,000	$40,166,700	$6.54		$536.78

Table 21-19 Pan Operating Cost Summary by Cost Center

Operating Cost	Life of Mine Cost	Average Annual cost	Cost/ ton ore	Cost/ ton mined	Cost/ oz Au Produced
Mine - Open Pit					
Mine G&A	$6,849,000	$789,900	$0.13	$0.05	$10.56
Engineering	5,011,000	577,900	0.09	0.03	7.72
Geology	4,058,000	468,000	0.08	0.03	6.25
Blasting	29,652,000	3,419,600	0.56	0.20	45.70
Drilling	15,508,000	1,788,400	0.29	0.10	23.90
Loading	18,646,000	2,150,300	0.35	0.13	28.74
Haulage	39,815,000	4,591,600	0.75	0.26	61.36
Roads & Dumps	16,426,000	1,894,300	0.31	0.11	25.32
Dewatering	755,000	87,100	0.01	0.01	1.16
Mine Maintenance	11,200,000	1,291,600	0.21	0.08	17.26
Total Mining	$147,920,000	$17,058,700	$2.78	$1.00	$227.97
Processing Plant					
Plant G&A	$56,963,000	$6,569,300	$1.07		$87.79
Primary Crushing	10,663,000	1,229,700	0.20		16.43
Secondary Crushing	14,934,000	1,722,300	0.28		23.02
Conveying	4,819,000	555,700	0.09		7.43
Agglomerator	32,260,000	3,720,400	0.61		49.72
Leach Pad	6,067,000	699,700	0.11		9.35
Refinery	2,494,000	287,600	0.05		3.84
Plant Maintenance	3,843,000	443,200	0.07		5.92
Assay Lab	5,400,000	622,700	0.10		8.32
Total Processing	$137,443,000	$15,850,600	$2.58		$211.82
General & Administrative					
Administration	$8,773,000	$1,011,800	$0.16		$13.52
Accounting	3,478,000	401,100	0.07		5.36
Purchasing	2,491,000	287,300	0.05		3.84
Human Relations	1,057,000	121,900	0.02		1.63
Security & Safety	2,659,000	306,600	0.05		4.10
Environmental	1,323,000	152,600	0.02		2.04
Total General & Administrative	$19,781,000	$2,281,300	$0.37		$30.49
Net Proceeds of Mines/Property Tax	$27,892,000	$3,216,600	$0.52		$42.99
Operating Cost - Contingency 5%	$15,257,000	$1,759,500	$0.29		$23.51
Total Operating cost	$348,293,000	$40,166,700	$6.54		$536.78

The yearly cash operating costs are estimated to average a little over $40 million per year during normal operations.

Operating cost estimates are based on projected production schedules, equipment requirements, operating hours, hourly equipment operating costs, manpower requirements and material consumption rates from detailed testing. Cost factors are based on past experience from similar operations as well as equipment usage estimates and cost parameters from the CAT or CostMine handbook and plant operating consumption rates from Summit Valley (a mining process plant constructor; a subsidiary of FLSmidth in Salt Lake City, Utah). As discussed in the previous section, the mine equipment is scheduled to mine the over-liner and under-liner material during leach pad construction, and the cost associated with this work is included in the sustaining capital cost estimate as a line item cost. The major component rebuild costs are not included in the operating costs as these items are capitalized.

21.2.2 Project Manpower

Project wages and salaries shown below are generally based on Mine and Mill Equipment Cost data provided by InfoMine. The scheduled hours for hourly workers are based on a 12 hour shift operating schedule averaged over the year with 5% total projected overtime. The scheduled salary cost component is figured on a 40 hour work week. During times of major equipment rebuilds 70% of the maintenance labor costs are distributed to the mine and plant equipment and charged to sustaining capital. The remaining 30% remains in operating costs for routine maintenance items. The payroll burdens are estimated to be 35% of the total salaries and wages plus overtime. The average yearly manpower costs and benefits for the Pan Project are projected in Table 21-20.

Table 21-20 Pan Summary Average Yearly Manpower Costs

Project Summary	Min year #	Max year #	Average #	Hourly Rate/ Salary	Burden	Burdened hourly rate/ salary	Annual Total
Mine Department							
Hourly Personnel	51	66	60	$26.46	35%	$35.72	$4,458,400
Salaried Personnel	15	15	15	99,000	35%	133,700	2,004,900
Total Mine Department & Cost	66	81	75				$6,463,300
Plant Department							
Hourly Personnel	46	46	46	$22.27	35%	$30.06	$2,875,800
Salaried Personnel	7	7	7	70,600	35%	95,300	667,400
Total Plant Department & Cost	53	53	53				$3,543,200
General/Admin Department							
General & Administrative	7	7	7	$68,200	35%	$92,100	$644,700
Compliance Department	10.5	10.5	10.5	49,500	35%	66,800	701,500
Total Salary Personnel & Cost	17.5	17.5	17.5				$1,346,200
Total, All Departments	136.5	151.5	145.5				$11,352,700

Positions requiring a fraction of a full-time commitment are either combined with another on-site fractional position or one shared with the corporate office. Projected manpower and annual costs for personnel in the mine department are listed in Table 21-21, based on the average manpower levels estimated for the life-of-mine. The mine department represents approximately 50% of the total manpower for the project.

Table 21-21 Mine Manpower

Mine Department	Min year #	Max year #	Average #	Hourly Rate/ Salary	Burden	Burdened hourly rate/ salary	Annual cost/person; Total
Hourly Personnel							
Driller	8	12	9.5	$27.00	35%	$36.45	$75,800
Blaster	2	2	2	27.00	35%	36.45	75,800
Blaster Helper	2	2	2	24.00	35%	32.40	67,400
Excavator/Loader Operator	4.0	8.0	5.5	29.00	35%	39.15	81,400
Truck Driver	14.0	20.0	17.0	24.00	35%	32.40	67,400
Dozer Operator	4	4	4	27.00	35%	36.45	75,800
Utility Operator	4	4	4	27.00	35%	36.45	75,800
Lead Mechanic	2	2	2	30.00	35%	40.50	84,200
Heavy Equip Mechanic	3	4	6	29.00	35%	39.15	81,400
Light Vehicle Mechanic	2	2	2	29.00	35%	39.15	81,400
Welder/Mechanic	2	2	2	27.00	35%	36.45	75,800
Apprentice	2	2	2	22.00	35%	29.70	61,800
Planner	1	1	1	27.00	35%	36.45	75,800
Electrician	1	1	1	29.00	35%	39.15	81,400
Total Hourly Personnel & Cost	51	66	60				$4,458,400
Salaried Personnel							
Mine Superintendant	1	1	1	$125,000	35%	$168,800	$168,800
Mine Foreman	4	4	4	100,000	35%	135,000	135,000
Maintenance Superintendent	1	1	1	125,000	35%	168,800	168,800
Maintenance Foreman	4	4	4	100,000	35%	135,000	135,000
Sr Mining Engineer	1	1	1	110,000	35%	148,500	148,500
Jr Mining Engineer	1	1	1	85,000	35%	114,800	114,800
Chief Surveyor	1	1	1	70,000	35%	94,500	94,500
Surveyor	1	1	1	60,000	35%	81,000	81,000
Sr Geologist	1	1	1	110,000	35%	148,500	148,500
Total Salaried Personnel/Cost	15	15	15				$2,004,900
Total Mine Department	66	81	75				$6,463,300

The estimated manpower and annual costs for personnel in the processing department are listed in Table 21-22, based on the average manpower levels estimated for the life-of-mine. The processing department makes up approximately 35% of the total manpower for the project.

Table 21-22 Processing Department Manpower

Processing Department	Min year #	Max year #	Average #	Hourly Rate/ Salary	Burden	Burdened hourly rate/ salary	Annual cost/person; Total
Hourly Personnel							
Primary Crusher Operator	4	4	4	$24.00	35%	$32.40	$67,400
Secondary Crusher Operator	4	4	4	21.80	35%	29.43	61,200
Agglomerator Operator	4	4	4	21.80	35%	29.43	61,200
Plant Operator	4	4	4	22.95	35%	30.98	64,400
Refinery Operator	2	2	2	22.95	35%	30.98	64,400
Stacker Operator	4	4	4	21.00	35%	28.35	59,000
Pad Operator	2	2	2	20.25	35%	27.34	56,900
Pad Helper	2	2	2	18.75	35%	25.31	52,600
Assayer	4	4	4	23.80	35%	32.13	66,800
Sample Prep	4	4	4	21.80	35%	29.43	61,200
Mechanic	4	4	4	22.32	35%	30.13	62,700
Mechanic Helper	4	4	4	21.80	35%	29.43	61,200
Electrician	4	4	4	23.83	35%	32.17	66,900
Total Hourly Personnel & Cost	46	46	46				$2,875,800
Salaried Personnel							
Plant Superintendent	1	1	1	$102,600	35%	$138,500	$138,500
Shift Foreman	4	4	4	66,000	35%	89,100	89,100
Clerk	1	1	1	42,029	35%	56,700	56,700
Metallurgist (Senior)	1	1	1	85,800	35%	115,800	115,800
Total Salaried Personnel/Cost	7	7	7				$667,400
Total Processing Department	53	53	53				$3,543,200

The estimated manpower and annual costs for personnel in the general & administration department is provided in Table 21-23, based on the average manpower levels projected for the life-of-mine. The general and administration department represents approximately 15% of the total manpower for the project.

Table 21-23 General and Administration Department Manpower

General/Admin Department	Min year #	Max year #	Average #	Hourly Rate/ Salary	Burden	Burdened hourly rate/ salary	Annual cost/person; Total
General & Administrative							
General Manager	1	1	1	$171,000	35%	$230,900	$230,900
Accountant	2	2	2	72,000	35%	97,200	97,200
Clerk	2	2	2	42,000	35%	56,700	56,700
Secretary	1	1	1	40,000	35%	54,000	54,000
Janitor	1	1	1	18.50	35%	24.98	52,000
Total General & Administrative	7	7	7				$644,700
Compliance Department							
Compliance Manager	0.5	0.5	0.5	81,631	35%	110,200	110,200
Environmental Engineer	0.5	0.5	0.5	81,631	35%	110,200	110,200
Health & Safety	1	1	1	40,284	35%	54,400	54,400
Human Resources	0.5	0.5	0.5	101,000	35%	136,400	136,400
Security	4	4	4	41,000	35%	55,400	55,400
Purchasing Agent	1	1	1	67,500	35%	91,100	91,100
Warehousemen	3	3	3	18.50	35%	24.98	52,000
Total Compliance Department	10.5	10.5	10.5				$701,500
Total G&A Department	17.5	17.5	17.5				$1,346,200

21.2.3 Mine Operating Costs

The estimated yearly mine department operating costs are listed by cost center in Table 21-24. The Mine G&A costs are negative during the first two years because of the inclusion of summary back charges for capital expenditures related to leach pad construction activities. The operating costs rise during year five due to the high strip ratio in the South pit during that time.

Table 21-24 Pan Yearly Mine Operating Costs

Cost Center	Sum of Yr 0	Sum of Yr 1	Sum of Yr 2	Sum of Yr 3	Sum of Yr 4	Sum of Yr 5	Sum of Yr 6	Sum of Yr 7	Sum of Yr 8	Sum of Yr 9
Mine G&A	($1,552,458)	$1,025,648	$1,066,512	$1,002,817	$1,028,041	$1,087,405	$1,071,633	$1,046,221	$952,586	$120,543
Engineering	345,180	565,091	596,536	547,587	567,213	613,405	600,520	581,359	522,903	70,921
Geology	297,414	444,248	520,817	399,495	449,227	566,270	530,914	485,070	340,921	24,004
Blasting	2,127,874	3,231,457	3,954,294	2,805,427	3,276,307	4,392,231	4,057,610	3,638,590	2,166,896	0
Drilling	1,118,073	1,569,988	2,188,891	1,468,153	1,645,843	2,206,320	2,261,420	1,868,623	1,180,720	0
Loading	1,354,046	1,822,128	2,399,653	1,881,976	1,946,994	2,739,045	2,795,167	2,061,609	1,599,163	46,427
Haulage	2,933,580	3,843,845	5,316,323	3,868,598	3,571,726	5,193,597	5,324,658	5,335,588	4,176,830	250,724
Roads & Dumps	1,017,026	1,851,269	1,991,989	1,967,480	1,975,396	1,994,025	1,993,596	1,981,101	1,654,532	0
Dewatering	57,554	88,470	89,272	89,047	89,129	89,321	89,289	89,188	74,176	0
Mine Maint	1,103,226	1,742,444	1,268,092	1,241,535	1,254,973	1,041,247	988,597	1,057,236	1,218,166	284,031
Grand Total	**$8,801,515**	**$16,184,589**	**$19,392,378**	**$15,272,115**	**$15,804,849**	**$19,922,866**	**$19,713,403**	**$18,144,585**	**$13,886,892**	**$796,651**

21.2.4 Mine Equipment Costs

Monthly required operating hours are calculated for each piece of equipment based on the production schedule, equipment availabilities, usages, drilling/blasting parameters, and load/haul parameters. Cost factors are based on past project experience and equipment cost parameters from the CAT and CostMine handbooks. The diesel fuel cost is estimated at $3.50/gal. The estimated yearly operating costs for the major mining equipment items are shown in Table 21-25, with all non-equipment costs summarized.

Table 21-25 Yearly Equipment Hourly Cost

Category	Sum of Yr 0	Sum of Yr 1	Sum of Yr 2	Sum of Yr 3	Sum of Yr 4	Sum of Yr 5	Sum of Yr 6	Sum of Yr 7	Sum of Yr 8	Sum of Yr 9
Mine Department										
16H	115,959	205,914	237,410	236,741	236,741	236,741	237,410	236,741	199,290	0
CAT320CL	25,383	51,341	58,362	58,198	58,198	58,198	58,362	58,198	48,992	0
DM45	1,035,349	1,565,213	2,184,103	1,463,379	1,641,068	2,201,545	2,256,631	1,863,849	1,176,700	0
Fuel Truck	30,822	54,015	54,168	54,015	54,015	54,015	54,168	54,015	45,470	0
Gen Sets	7,617	13,893	14,397	14,239	14,288	14,403	14,407	14,323	11,918	0
Light Plants	76,551	134,154	134,533	134,154	134,154	134,154	134,533	134,154	112,932	0
Lube Truck	40,005	70,471	70,980	70,702	70,735	70,811	70,987	70,758	70,664	11,172
Pressure Washer	7,789	13,832	14,026	13,947	13,964	14,002	14,029	13,975	11,718	0
Service Truck	53,332	94,188	95,074	94,650	94,715	94,869	95,087	94,762	79,585	0
Rock Breaker	3,947	6,916	6,936	6,916	6,916	6,916	6,936	6,916	6,916	1,094
Bobcat	22,793	40,850	41,741	41,427	41,509	41,701	41,757	41,568	34,759	0
Water Truck	25,064	44,960	44,960	44,960	44,960	44,960	44,960	44,960	44,960	0
Compressor	13,103	23,506	24,038	23,853	23,902	24,017	24,048	23,937	20,010	0
785-1	611,281	1,059,310	1,096,947	1,085,046	1,076,209	1,067,373	1,061,502	1,049,701	1,040,864	164,259
785-2	611,281	1,059,310	1,096,947	1,085,046	1,076,209	1,067,373	1,061,502	1,049,701	1,040,864	86,465
785-3	561,787	1,051,952	1,096,947	1,085,046	1,076,209	1,067,373	1,061,502	1,049,701	783,235	0
785-4	426,272	584,702	1,089,791	538,756	171,248	977,962	1,061,502	1,049,701	783,235	0
785-5	581,228	0	823,743	0	81,824	887,434	963,591	953,187	471,546	0
785-6	82,194	0	0	0	0	0	0	82,530	0	0
RH120	963,532	1,713,255	1,796,296	1,775,253	1,759,241	1,743,229	1,732,066	1,711,204	1,423,899	0
D9-1	416,199	763,120	805,600	803,358	803,358	803,358	805,600	803,358	673,362	0
RTD 834H	429,044	791,514	846,180	843,824	843,824	843,824	846,180	843,824	707,426	0
CAT992	326,458	0	472,279	0	71,079	855,722	930,003	226,559	89,194	46,426
Non-Equipment	2,334,525	6,842,173	7,286,920	5,798,605	6,410,483	7,612,886	7,136,640	6,666,963	5,009,353	487,235
Total Mine Dept	8,801,515	16,184,589	19,392,378	15,272,115	15,804,849	19,922,866	19,713,403	18,144,585	13,886,892	796,651

21.2.5 Mine Operating Cost Statistics

The life of mine operating cost per ton mined is projected to be $1.00/ton, and the life of mine cost per ton processed is estimated at $2.78/ton. The yearly cost/ton by category is shown in Table 21-26.

Table 21-26 Mine Operating Cost Statistics

Operating Statistics Mine Department - $'s	Yr 0 Total	Yr 1 Total	Yr 2 Total	Yr 3 Total	Yr 4 Total	Yr 5 Total	Yr 6 Total	Yr 7 Total	Yr 8 Total	Yr 9 Total	Life of Mine
$ per ton Mined											
Mine G&A	-0.14	0.06	0.05	0.07	0.06	0.05	0.05	0.06	0.09	0.00	0.05
Engineering	0.03	0.04	0.03	0.04	0.03	0.03	0.03	0.03	0.05	0.00	0.03
Geology	0.03	0.03	0.03	0.03	0.03	0.02	0.03	0.03	0.03	0.00	0.03
Blasting	0.20	0.20	0.20	0.21	0.20	0.19	0.20	0.20	0.21	0.00	0.20
Drilling	0.10	0.10	0.11	0.11	0.10	0.10	0.11	0.10	0.11	0.00	0.10
Loading	0.13	0.11	0.12	0.14	0.12	0.12	0.13	0.11	0.16	0.00	0.13
Haulage	0.27	0.24	0.26	0.29	0.22	0.23	0.26	0.29	0.41	0.00	0.27
Roads & Dumps	0.09	0.12	0.10	0.15	0.12	0.09	0.10	0.11	0.16	0.00	0.11
Dewatering	0.01	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.01
Mine Maintenance	0.10	0.11	0.06	0.09	0.08	0.05	0.05	0.06	0.12	0.00	0.08
Total Mine Department	**0.82**	**1.01**	**0.96**	**1.13**	**0.97**	**0.88**	**0.95**	**1.00**	**1.35**	**0.00**	**1.00**
$ per ton Processed											
Mining											
Mine G&A	-0.51	0.17	0.17	0.16	0.17	0.18	0.17	0.17	0.15	0.22	0.13
Engineering	0.11	0.09	0.10	0.09	0.09	0.10	0.10	0.09	0.08	0.13	0.09
Geology	0.10	0.07	0.08	0.06	0.07	0.09	0.09	0.08	0.05	0.04	0.08
Blasting	0.70	0.52	0.64	0.45	0.53	0.71	0.65	0.59	0.35	0.00	0.56
Drilling	0.37	0.25	0.35	0.24	0.27	0.36	0.36	0.30	0.19	0.00	0.29
Loading	0.45	0.29	0.39	0.30	0.31	0.44	0.45	0.33	0.26	0.09	0.35
Haulage	0.96	0.62	0.85	0.62	0.58	0.84	0.86	0.86	0.67	0.47	0.75
Roads & Dumps	0.33	0.30	0.32	0.32	0.32	0.32	0.32	0.32	0.27	0.00	0.31
Dewatering	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01
Mine Maintenance	0.36	0.28	0.20	0.20	0.20	0.17	0.16	0.17	0.20	0.53	0.21
Total Mine Department	**2.89**	**2.61**	**3.12**	**2.46**	**2.55**	**3.21**	**3.17**	**2.92**	**2.24**	**1.48**	**2.78**

21.2.6 Plant Operating Costs

The estimated yearly processing department operating costs by cost center are shown in Table 21-27 below. The plant operations consist of primary crushing (including the utilization of a 15 cubic yard front end loader to feed material to the crusher), secondary crushing, agglomeration of the crushed ore prior to stacking on the leach pad, conveying and stacking on the pad, processing in the plant to a doré and shipment to a final refinery.

Table 21-27 Pan Yearly Plant Operating Costs

Cost Center	Sum of Yr 0	Sum of Yr 1	Sum of Yr 2	Sum of Yr 3	Sum of Yr 4	Sum of Yr 5	Sum of Yr 6	Sum of Yr 7	Sum of Yr 8	Sum of Yr 9
Plant G&A	$3,328,767	$6,615,859	$6,635,731	$6,617,600	$6,617,600	$6,617,600	$6,635,731	$6,617,600	$6,617,600	$659,470
Primary Crushing	599,422	1,223,623	1,230,862	1,239,004	1,244,691	1,244,691	1,248,117	1,244,691	1,244,691	143,167
Secondary Crushing	855,482	1,737,348	1,742,107	1,737,348	1,737,348	1,737,348	1,742,107	1,737,348	1,737,348	170,325
Conveying	277,709	557,016	558,583	557,016	557,016	557,016	558,583	557,016	557,016	82,217
Agglomerator	1,845,333	3,756,145	3,766,436	3,756,145	3,756,145	3,756,145	3,766,436	3,756,145	3,756,145	345,314
Leach Pad	351,197	701,145	703,066	701,145	701,145	701,145	703,066	701,145	701,145	102,429
Refinery	144,323	287,587	287,940	287,587	287,587	287,587	287,940	287,587	287,587	47,857
Plant Maint	437,407	642,992	422,409	393,719	379,716	377,839	377,161	376,130	376,130	59,632
Assay Lab	313,500	623,215	624,922	623,215	623,215	623,215	624,922	623,215	623,215	97,716
Grand Total	**$8,153,140**	**$16,144,930**	**$15,972,057**	**$15,912,780**	**$15,904,463**	**$15,902,586**	**$15,944,063**	**$15,900,878**	**$15,900,878**	**$1,708,126**

21.2.7 Plant Equipment Costs

Monthly required operating hours are calculated for each piece of equipment based on the production schedule, equipment availabilities, usages, drilling/blasting parameters and load/haul parameters. Cost factors are based on past project experience and equipment cost parameters from the CAT and CostMine handbooks. The diesel fuel cost is estimated at $3.50/gal. The estimated yearly operating costs for the major processing equipment items are shown in Table 21-28, with all non-equipment costs summarized.

Table 21-28 Yearly Plant Equipment and Non-Equipment Costs

Category	Sum of Yr 0	Sum of Yr 1	Sum of Yr 2	Sum of Yr 3	Sum of Yr 4	Sum of Yr 5	Sum of Yr 6	Sum of Yr 7	Sum of Yr 8	Sum of Yr 9
Plant Department										
Backhoe 430	4,603	10,902	12,678	12,643	12,643	12,643	12,678	12,643	12,643	2,044
Crane 35 ton	7,599	15,075	15,116	15,075	15,075	15,075	15,116	15,075	15,075	2,437
Conveying #1	237,266	474,532	475,873	474,532	474,532	474,532	475,873	474,532	474,532	75,067
Cone Crusher	855,482	1,737,348	1,742,107	1,737,348	1,737,348	1,737,348	1,742,107	1,737,348	1,737,348	170,325
Conveying #2	24,035	49,020	49,155	49,020	49,020	49,020	49,155	49,020	49,020	4,249
Tertiary Crusher	0	0	0	0	0	0	0	0	0	0
Conveying #3	16,408	33,464	33,555	33,464	33,464	33,464	33,555	33,464	33,464	2,901
Lime Silo	581,624	1,186,221	1,189,471	1,186,221	1,186,221	1,186,221	1,189,471	1,186,221	1,186,221	102,821
Cement Silo	1,109,554	2,262,932	2,269,132	2,262,932	2,262,932	2,262,932	2,269,132	2,262,932	2,262,932	196,150
Agglomerator	154,154	306,992	307,833	306,992	306,992	306,992	307,833	306,992	306,992	46,342
Conveying Pad	158,758	316,653	317,520	316,653	316,653	316,653	317,520	316,653	316,653	47,813
D8-Pad	0	0	0	0	0	0	0	0	0	0
CAT992	32,173	76,686	80,775	92,067	97,754	97,754	98,030	97,754	97,754	15,464
Non-Equipment	4,971,484	9,675,105	9,478,842	9,425,833	9,411,829	9,409,952	9,433,593	9,408,244	9,408,244	1,042,513
Total Plant Dept	8,153,140	16,144,930	15,972,057	15,912,780	15,904,463	15,902,586	15,944,063	15,900,878	15,900,878	1,708,126

21.2.8 Plant Operating Cost Statistics

The life of mine operating cost per ton processed is estimated at $2.58/ton. The yearly cost/ton by category is shown on Table 21-29.

Table 21-29 Yearly Plant Operating Cost Statistics

Operating Statistics Plant Department - $'s	Yr 0 Total	Yr 1 Total	Yr 2 Total	Yr 3 Total	Yr 4 Total	Yr 5 Total	Yr 6 Total	Yr 7 Total	Yr 8 Total	Yr 9 Total	Life of Mine
$ per ton Processed											
Processing											
Plant G&A	1.09	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.23	1.07
Primary Crushing (w/ loader)	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.27	0.20
Secondary Crushing	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.32	0.28
Conveying	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.15	0.09
Agglomerator	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.64	0.61
Leach Pad	0.12	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.19	0.11
Refinery	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.09	0.05
Plant Maintenance	0.14	0.10	0.07	0.06	0.06	0.06	0.06	0.06	0.06	0.11	0.07
Assay Lab	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.18	0.10
Total Plant Department	**2.68**	**2.60**	**2.57**	**2.56**	**2.56**	**2.56**	**2.56**	**2.56**	**2.56**	**3.18**	**2.58**

21.2.9 General and Administration Costs

The estimated yearly general & administration department costs by cost center are shown in Table 21-30. All general management costs are contained in the G&A cost estimate, including insurance, legal, and other outside services, as well as accounting and human resources.

Table 21-30 Pan Yearly General and Administration Costs

Cost Center	Sum of Yr 0	Sum of Yr 1	Sum of Yr 2	Sum of Yr 3	Sum of Yr 4	Sum of Yr 5	Sum of Yr 6	Sum of Yr 7	Sum of Yr 8	Sum of Yr 9
Administration	$615,307	$998,829	$999,775	$998,829	$998,829	$998,829	$999,775	$998,829	$998,829	$166,643
Accounting	228,695	397,701	398,695	397,701	397,701	397,701	398,695	397,701	397,701	65,221
Purchasing	186,929	282,061	282,759	282,061	282,061	282,061	282,759	282,061	282,061	45,731
Human Resources	76,036	120,075	120,262	120,075	120,075	120,075	120,262	120,075	120,075	19,894
Security & Safety	199,815	300,983	301,739	300,983	300,983	300,983	301,739	300,983	300,983	49,352
Environmental	92,706	150,621	150,772	150,621	150,621	150,621	150,772	150,621	150,621	25,114
Grand Total	**$1,399,487**	**$2,250,270**	**$2,254,002**	**$2,250,270**	**$2,250,270**	**$2,250,270**	**$2,254,002**	**$2,250,270**	**$2,250,270**	**$371,954**

21.2.10 General and Administration Cost Statistics

The life of mine general & administration cost per ton processed is projected at $0.37/ton. The yearly cost/ton by category is shown on Table 21-31.

Table 21-31 Yearly Plant Operating Cost Statistics

Operating Statistics G&A Department - $'s	Yr 0 Total	Yr 1 Total	Yr 2 Total	Yr 3 Total	Yr 4 Total	Yr 5 Total	Yr 6 Total	Yr 7 Total	Yr 8 Total	Yr 9 Total	Life of Mine
$ per ton Processed											
G&A											
Administration	0.20	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.31	0.16
Accounting	0.08	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.12	0.07
Purchasing	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.09	0.05
Human Relations	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.04	0.02
Security & Safety	0.07	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.09	0.05
Environmental	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.02
Total G&A Department	**0.46**	**0.36**	**0.36**	**0.36**	**0.36**	**0.36**	**0.36**	**0.36**	**0.36**	**0.69**	**0.37**

21.2.11 Insurance

General liability and property insurance is estimated to require approximately $20,000/month, from comparisons with operations of similar size and extent.

21.2.12 Net Proceeds of Mines/Property Tax

The State of Nevada imposes a yearly tax on the net proceeds of all mining operations conducted within the state, plus a yearly property tax on all fixed and mobile equipment employed by the mining operations. The net proceeds of mines tax is based on the income derived from sales of all products from the mine less A) royalties; B) mine, plant, and administration expenses sourced in the state of Nevada; C) development expenses paid during the year; D) prescribed depreciation of tangible assets according to set, pre-defined classifications contained in state regulations; and E) reclamation expenditures incurred during the year of the tax. The tax rate for the net proceeds of mines tax is set by law at 5%.

Tangible fixed and mobile equipment is subject to a yearly property tax at the rate imposed by White Pine County, the jurisdiction of the mining operations – which rate is currently 35% of 3.66% (equivalent to 1.281% of property replacement value, less depreciation).

The combined net proceeds and property taxes equate to an average cost of approximately $0.52/ton of ore processed.

21.2.13 Contingency

Gustavson applied a contingency of 5% to the costs of mining, processing and general & administration costs for the Pan project.

21.2.14 Income Tax

Income taxes for the Pan Project were based on US Federal Income Tax rules and regulations, since Nevada imposes no state income tax. From the operating revenues minus operating expenses (the operating margin), a deduction was calculated for depreciation of fixed and mobile assets. Buildings and improvements to land were amortized over units of production (since the mine has a short life), fixed plant equipment was depreciated over 10 years at straight line rates, mobile mine and plant equipment was depreciated over 6 years at straight line rates, and light vehicles were depreciated over 5 years at straight line rates. These depreciation rates were chosen to limit the impact of alternative minimum taxes on the project.

Federal law allows a mining operation to deduct either cost depletion (the charging of the cost of the acquisition of reserves over the life of the mine) or percentage depletion (the application of a percentage to the gross income less royalties to determine an allowed deduction against taxable income), which represents a significant deduction. The allowed rate for gold projects is 15%. In years 5, 6 and 7 percentage depletion caused a minimum tax to be applicable. After the inclusion of the minimum tax, the income tax yielded an effective tax rate of at least 20% of the operating margin less allowable depreciation, consistent with federal rules and regulations.

22 ECONOMIC ANALYSIS

22.1 Financial Analysis

The financial evaluation for the Pan Project is based upon the design for mining, processing and operations activities completely contained in MIDWAY ground mining proven and probable reserves of 53.3 million tons grading 0.016 opt Gold in an open pit, with an overall Strip Ratio for both pits of 1.79:1. All ores will be processed in a 17,000-ton per day Heap Leach Process employing a standard Carbon Adsorption circuit operating at 5,000 gallons per minute. Mining will occur in two separate main pits, the South Pit and the North Pit, and four satellite pits. Metal recoveries are expected to average 85% in ores from the South Pit and 65% in ores from the North Pit.

From an optimization study, the cut-off grade for the design of the South Pit, the area to be mined first, is 0.006 Au opt, which is equivalent to 0.21 grams gold per metric ton of ore (gpt). The cut-off grade for the design of the North Pit is 0.008 Au opt, or 0.27 gpt, which allows for the lower percentage recovery projected for the north area ores.

A 5% contingency was added to the operating costs, and from an analysis of the expected variation of projected capital costs an 8% contingency was provided for capital costs. The mine would operate on two twelve-hour shift per day basis 356 days per year, while the plant would operate 365 days per year on two twelve-hour shifts per day.

Cash flows were calculated on an after-tax basis, utilizing a federal income tax rate of 35% and including the deductions for percentage depletion as allowed by federal law. An alternative minimum tax rate of 20% was used to calculate an additional alternative minimum tax in those years in which percentage depletion created a minimum tax condition. Nevada has no state income tax.

22.2 Commodity Price(s)

The three year trailing average price of gold, as of October 31, 2011 and net of the expected deductions for refining at a third party refiner in the western United States, was calculated to be $1,200/ounce of gold and was applied to all years of gold sales.

22.3 Royalties and Taxes

Based upon a review of the underlying property agreements by MIDWAY, a 4% royalty was calculated and used in the derivation of net revenues.

22.4 Cash Flow Analysis

An analysis of the projected capital expenditures, revenues net of royalties, operating expenses, and income taxes was prepared on an annual basis to determine the estimated after-tax cash flows from the project. Federal income tax depreciation and percentage depletion rules were

applied to the appropriate capital asset and income categories to calculate the regular income tax burden. Alternative minimum tax provisions were applied to those years in which the regular tax was below the minimum allowable level.

Projected economic outcomes were prepared on an annual basis, including the internal rate of return and utilizing a 5% discount factor for net present value calculations. An analysis of the years required for payback of initial capital and the payback multiple (the positive cash flows as a multiple of the total capital investment) were also generated.

22.5 Economic Projection

The project is projected to have a total lifespan of 9.75 years: one year of construction and pre-production, 8.25 years of full operations and one-half year of residual gold production. Approximately 864,000 ounces of gold are projected to be mined and 649,000 ounces of gold recovered and produced for sale. An initial capital investment of $99.168 million, including contingency and working capital, is expected to be required with a total of $154.904 million over the life-of-mine, including reclamation, contingency and all sustaining capital. Following the Gold Institute (GI) guidelines, cash operating cost is projected to be $537 per ounce of gold. The GI total cash cost (including royalties) would be $585 per ounce and the GI total production cost is expected to be $824 per ounce. The economic projection for the Pan Project is presented in Table 22-1.

Table 22-1 Economic Projection

Gold Price	Net Present Value @ 5%	Internal Rate of Return	Payback Period	Payback Multiple
$855	$4,100,000	6.0%	7.22	1.30
$1,200	$122,600,000	32.4%	2.59	2.88
$1,550	$235,100,000	55.7%	1.70	4.53
$1,900	$344,400,000	79.1%	1.20	6.30

22.6 Sensitivity Analysis

22.6.1 Price

Consistent with almost all gold projects, the Pan Project is very responsive to changes in the price of gold. For this study, an increase in the average gold price to $1550 per ounce increases the NPV-5 by 92% to approximately $235 million. An increase to $1900/oz in the gold price results in an NPV-5 of $344 million, an increase of 181% (Figure 22-1).

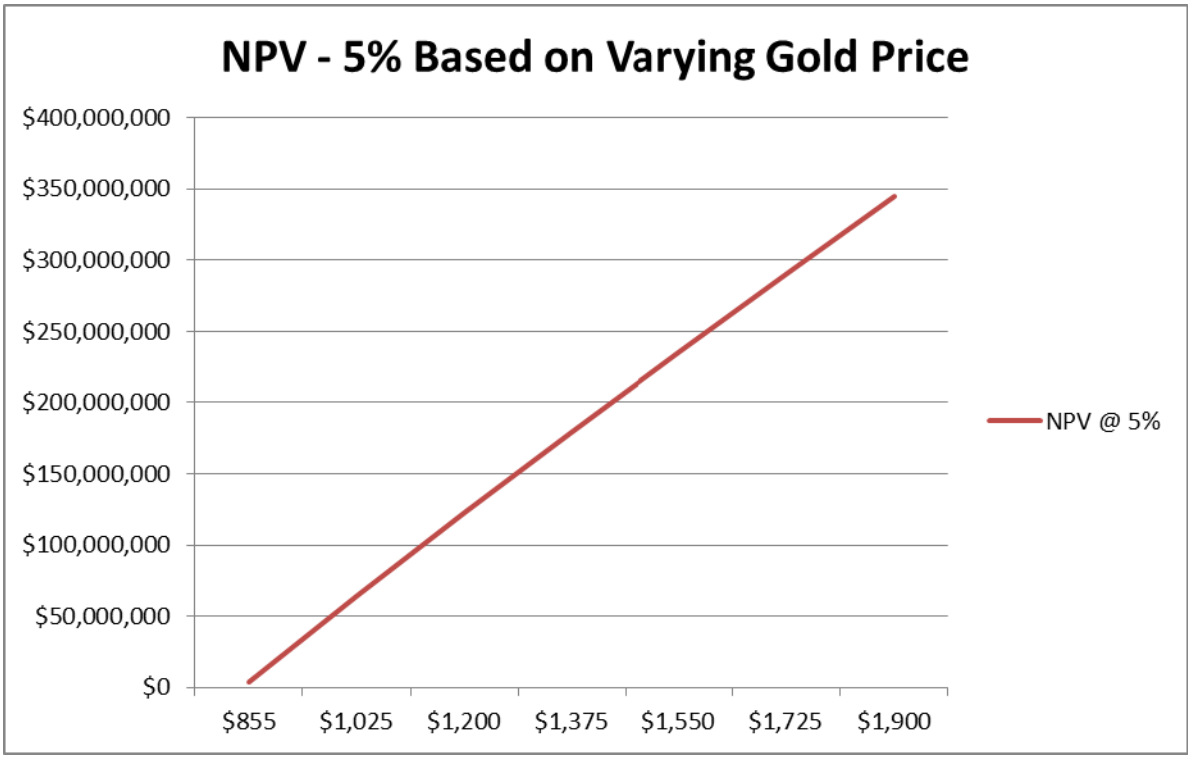


Figure 22-1 Gold Price Sensitivity

22.6.2 Operating Cost, Capital Cost and Gold Grade

The project is quite sensitive to the cost of operations, incurring an $18 million decline in the NPV-5 for each increase of 10% in the operating costs, yielding a $13 million decline in the NPV-5 for each increase of 10% in the capital costs, and experiencing a $40 million increase in the NPV-5 for each increase of 10% in the average ore grade fed to the processing plant, as shown in Figure 22-2.

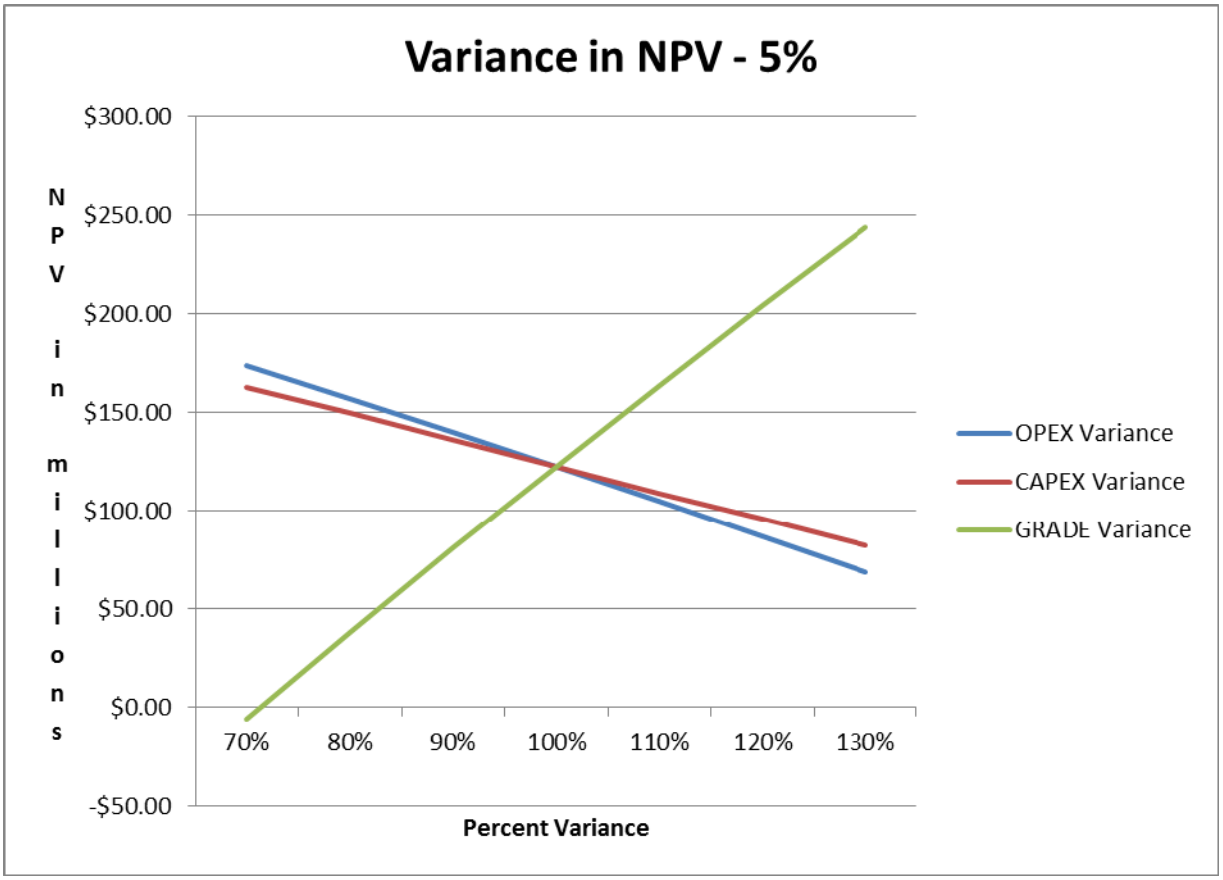


Figure 22-2 Economic Sensitivities

23 ADJACENT PROPERTIES

Adjacent properties have no known existing, potential, or reasonable future material impact on the Pan Project. MIDWAY's Gold Rock Project is located 8 miles to the southeast of Pan, and could offer opportunities for synergistic development.

24 OTHER RELEVANT DATA AND INFORMATION

Gustavson knows of no additional information or explanation necessary to make this report more understandable. This Technical Report has been prepared to accurately and independently reflect the information contained in the Feasibility Study prepared by Gustavson Associates.

25 INTERPRETATION AND CONCLUSIONS

Based on the work done as part of and resulting from this Feasibility Study, Gustavson concludes:

- The Pan deposit now contains over 1.1 million ounces of gold in Measured and Indicated Mineral Resource categories using a 0.004 opt cutoff.
- There continues to be good potential for the discovery of additional Mineral Resources at Pan.
- There is a proven and probable Mineral Reserve of 53,254,000 tons, containing 864,000 ounces of gold.
- The Pan project is an economic mining project generating approximately $122 million net present value, and an internal rate of return of 32.4% at a gold price of $1200.

26 RECOMMENDATIONS

Based on the results of this Feasibility Study, Gustavson recommends:

- Continuation of drilling to fill-in areas that are promising development areas, specifically between the North and South pits. MIDWAY is planning on $ 1.5 million in drilling for the next two years.
- Finalization of engineering for infrastructure, buildings, mining, and site facilities. This is currently estimated at $0.86 million (included in capital costs in the Feasibility Study)
- Support for the EIS and permitting, estimated to be $ 0.4 million over the next 2 years.
- Construction of the access road which is estimated at $ 1.7 million.
- Drilling and testing of a water well, estimated at $0.1 million.
- Purchase of long-lead equipment estimated at approximately $ 2.0 million.
- Additional Geotechnical testing for pit-slope designs, as discussed in the Mining Section of this Technical Report. The estimated cost for this work is approximately $0.2 million.

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