Appendix 2A
Waste Rock Management Plan

Midway Gold US Inc.
Waste Rock Management Plan

Pan Project
Nevada

Prepared for:

Midway Gold US Inc.
8310 South Valley Highway
Englewood, Colorado 80112

And

705 Avenue K
Ely, Nevada 89301

Prepared by:

Interralogic, Inc.
4715 Innovation Dr., Suite 110
Fort Collins, CO 80525
(970) 225-8222

Project No: 100013

January 2013

TABLE OF CONTENTS

1 INTRODUCTION 1

2 MINE PLAN 2

3 WASTE ROCK DISPOSAL AREA DESIGN 4

4 WASTE ROCK GEOCHEMISTRY 6

4.1 SITE WIDE GEOCHEMISTRY SUMMARY 6

4.2 WASTE ROCK GEOCHEMISTRY 8

5 PAN SITE WASTE ROCK MANAGEMENT 15

5.1 WASTE ROCK MANAGEMENT PLAN 16

5.2 ADAPTIVE MANAGEMENT PLAN 17

5.2.1 PAG WASTE ROCK ADAPTIVE MANAGEMENT FOR THE NORTH PAN PIT 18

5.3 OPERATIONAL WASTE ROCK SAMPLING AND ANALYSIS 18

5.3.1 QUARTERLY MONITORING 18

5.3.2 BLAST HOLE SAMPLING AND ANALYSIS 19

6 WASTE ROCK DISPOSAL AREA CLOSURE STRATEGY 21

7 REFERENCES 24

LIST OF TABLES

TABLE 1 - WRDA SLOPE ANGLE SUMMARY....4
TABLE 2 - GEOCHEMICAL DATA SOURCES AND SAMPLE TYPES....7
TABLE 3 - SUMMARY OF WASTE ROCK TYPES AND SAMPLE COLLECTION FOR THE NORTH PAN PIT....9
TABLE 4 - SUMMARY OF WASTE ROCK TYPES AND SAMPLE COLLECTION FOR THE SOUTH PAN PIT....10
TABLE 5 - ABA DATA SUMMARY....14

LIST OF FIGURES

FIGURE 1 - PAN SITE LOCATION....1
FIGURE 2 - FACILITIES LAYOUT PLAN....3
FIGURE 3 - NORTH WRDA PLAN AND CROSS SECTION (TETRATECH, 2011)....5
FIGURE 4 - SOUTH WRDA PLAN AND CROSS SECTION (TETRATECH, 2011)....5
FIGURE 5 - NP:AP SCATTER PLOTS....11
FIGURE 6 - NNP HISTOGRAMS....12
FIGURE 7 - TOTAL SULFUR, ABA SCATTER PLOTS....13

ABBREVIATIONS AND ACRONYMS

Glossary

ABA	Acid Base Accounting
AE	Actual Evaporation
AP	Acid Potential
ARD	Acid Rock Drainage
BLM	Bureau of Land Management
BMP	Best Management Practices
ET	Evapotranspiration
HCT	Humidity Cell Test
m	Meter
MAP	Mean Annual Precipitation
mg/L	Milligram per Liter
ML	Metals Leaching
MWMP	Meteoric Water Mobility Procedure
NAG pH	Net Acid Generation pH
NDEP	Nevada Department of Environmental Protection

NNP	Net Neutralization Potential
NP	Neutralization Potential
PAG	Potentially Acid Generating
UPAG	Unconfirmed PAG
PE	Potential Evaporation
T/kton	Tons per Kiloton (parts per thousand)
Ton	Short Ton
WRDA	Waste Rock Disposal Areas
yr	Year

1 INTRODUCTION

Midway Gold US Inc.'s (Midway) proposed Pan Project, located in White Pine County, Nevada (Figure 1) includes two proposed waste rock disposal areas (WRDA); the North WRDA and South WRDA. This report describes waste placement and management concepts and is intended to be read in the context of the Pan Project Plan of Operations and the Interim Baseline Geochemistry Report (Interralogic, 2011) to meet the requirements of IM-NV-2010-014 (BLM, 2010).

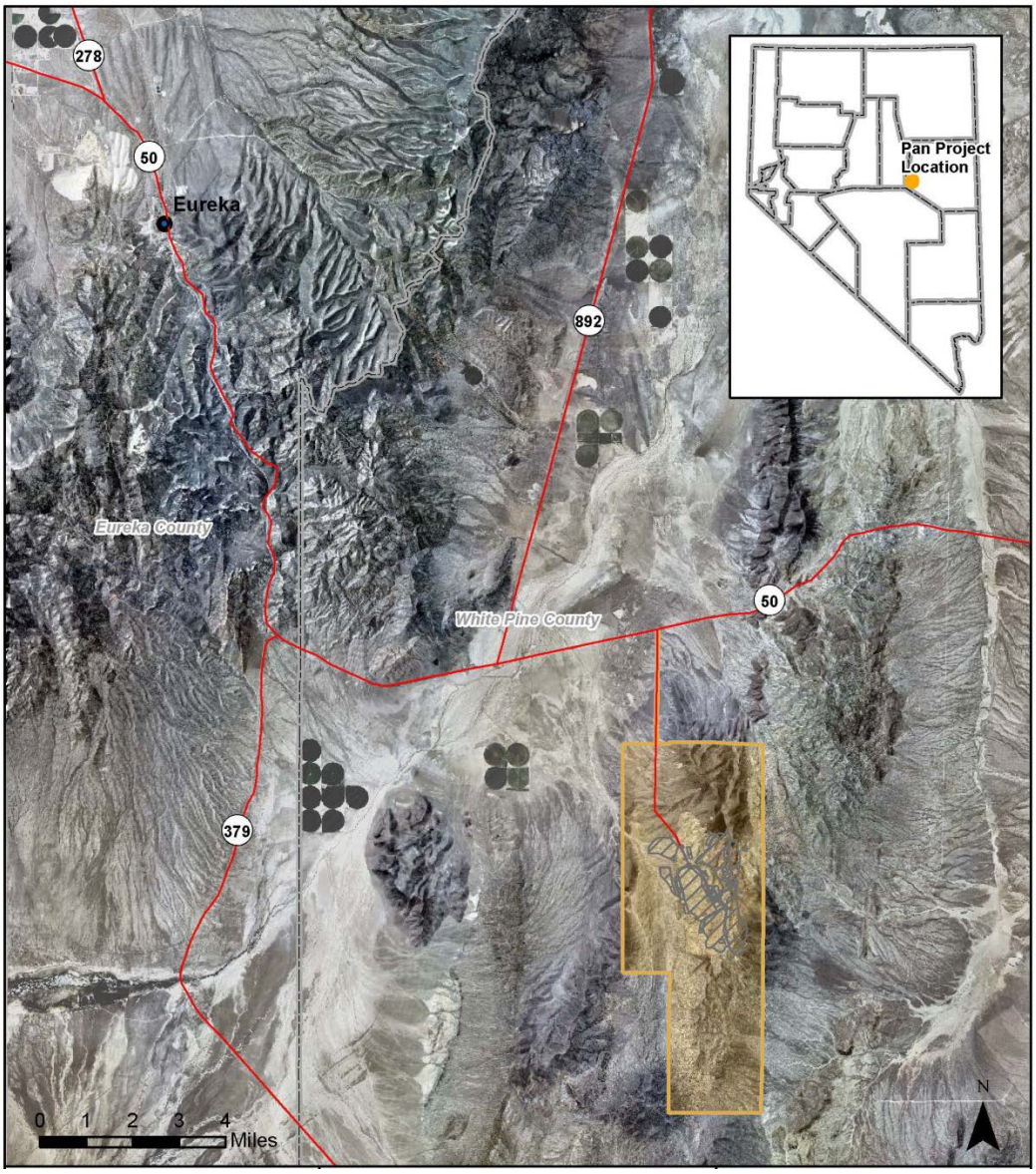


Figure 1 - Pan Site Location

The objectives of this Plan are to:

- Describe the geochemistry of waste rock that will be placed in each area
- Describe the WRDA design and adaptive management concepts
- Describe the placement strategy for North and South WRDAs

2 MINE PLAN

The WRDAs and other mine facilities planned for the proposed Pan Project are shown in Figure 2. The facilities in the Pan Project area include:

- North Pan Pit
- South Pan Pit
- Four smaller satellite pits
    - Black Stallion Pit
    - North Syncline Pit
    - Syncline Pit
    - South Syncline Pit
- Leach pad (1) and process ponds (2)
- Waste rock disposal areas (2)
- Growth media stockpiles
- Mine office and related facilities
- Miscellaneous facilities including roads, power lines, transformers, substations, pipelines, and storm water management structures.

The detailed mine plan is provided in the Plan of Operations and involves the following general components:

- 13 years of open pit mining in two main pits and four satellite pits; The projected mine life of 13 years uses exploration data to support the first eight years of mine planning with concomitant waste rock placement and heap leach pad development; the remaining five years of mine planning were extrapolated using professional experience to estimate pit dimensions, ore and waste rock volumes, and waste rock characterization.
- Mining of South Pan Pit first then North Pan Pit
- Truck haulage of waste and ore from the pits to WRDAs and crusher, respectively
- Crushing and heap leaching of ore.

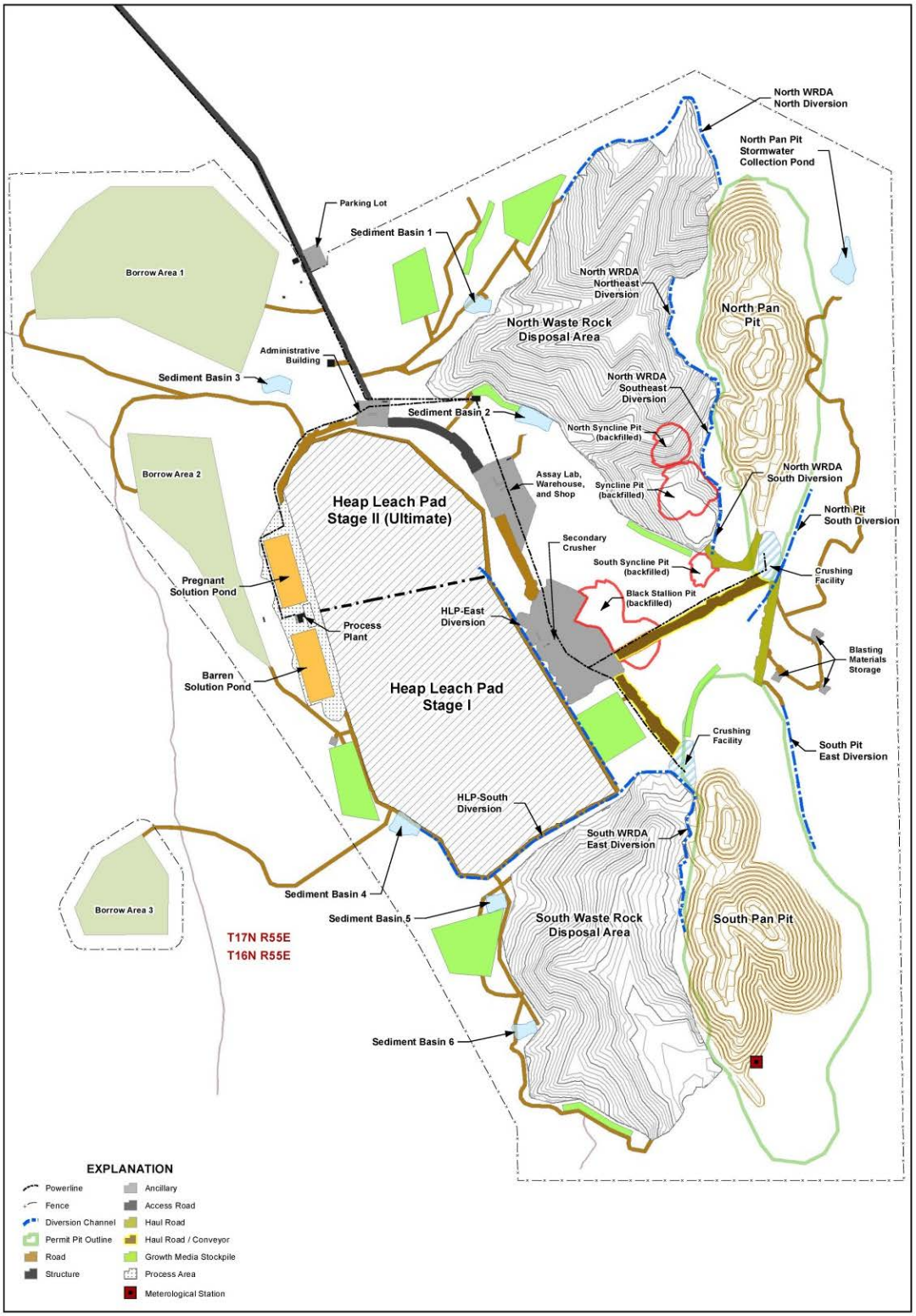


Figure 2 - Facilities Layout Plan

Closure of WRDAs is described in detail in the Reclamation Plan (Tetratech, 2011) and includes surface water control, soil cover, erosion control, and revegetation consistent with or exceeding industry best practices. A summary is provided in Section 6 below.

3 WASTE ROCK DISPOSAL AREA DESIGN

The following description was extracted from Tetratech (2011).

> Waste rock will be placed in two WRDAs - the North WRDA and the South WRDA. Both WRDAs are located along the western perimeters of their respective pits. Waste rock will be placed by trucks into the WRDAs, which are expected to contain a well-graded mixture of sized material placed in lifts. Approximately 53 and 25 Mt of waste rock will be disposed of in the North and South WRDA, respectively. The estimated volume of the North WRDA (assuming 2 tons per loose cubic yard [LCY]) is approximately 26.5 million LCY and disturbs approximately 264 acres of land. The estimated volume of the South WRDA is approximately 22.5 million LCY and disturbs approximately 216 acres of land. The WRDAs will be constructed at or near the final grade depicted on Figures 3 and 4. Cross-sections and measured slope gradients for the WRDAs are provided in Table 1 and shown on Figures 3 and 4.

Table 1 - WRDA Slope Angle Summary

North WRDA Surface Slope		
Slope Range	**Existing Ground Area (Acres)**	**Planned Reclaimed Surface (Acres)**
Horizontal to 3.00:1	241	258
2.99:1 to 2.90:1	3	2
2.89:1 to 2.50:1	9	2
2.49:1 to 2.00:1	8	1
1.99:1 to Vertical	2	0.5
Total	**264**	**264**
South WRDA Surface Slope		
Slope Range	**Existing Ground Area (Acres)**	**Planned Reclaimed Surface (Acres)**
Horizontal to 3.00:1	203	212
2.99:1 to 2.90:1	1	1
2.89:1 to 2.50:1	6	2
2.49:1 to 2.00:1	5	0.4
1.99:1 to Vertical	1	0.4
Total	**216**	**216**

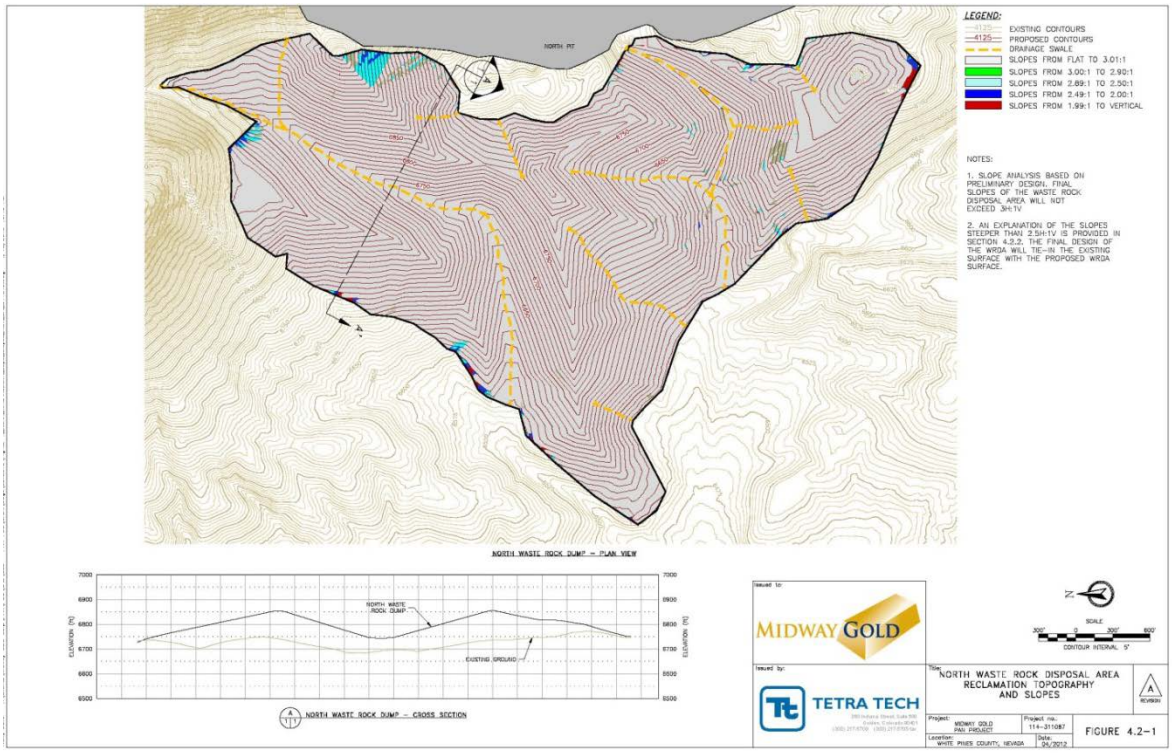


Figure 3 - North WRDA Plan and Cross Section (TetraTech, 2011)

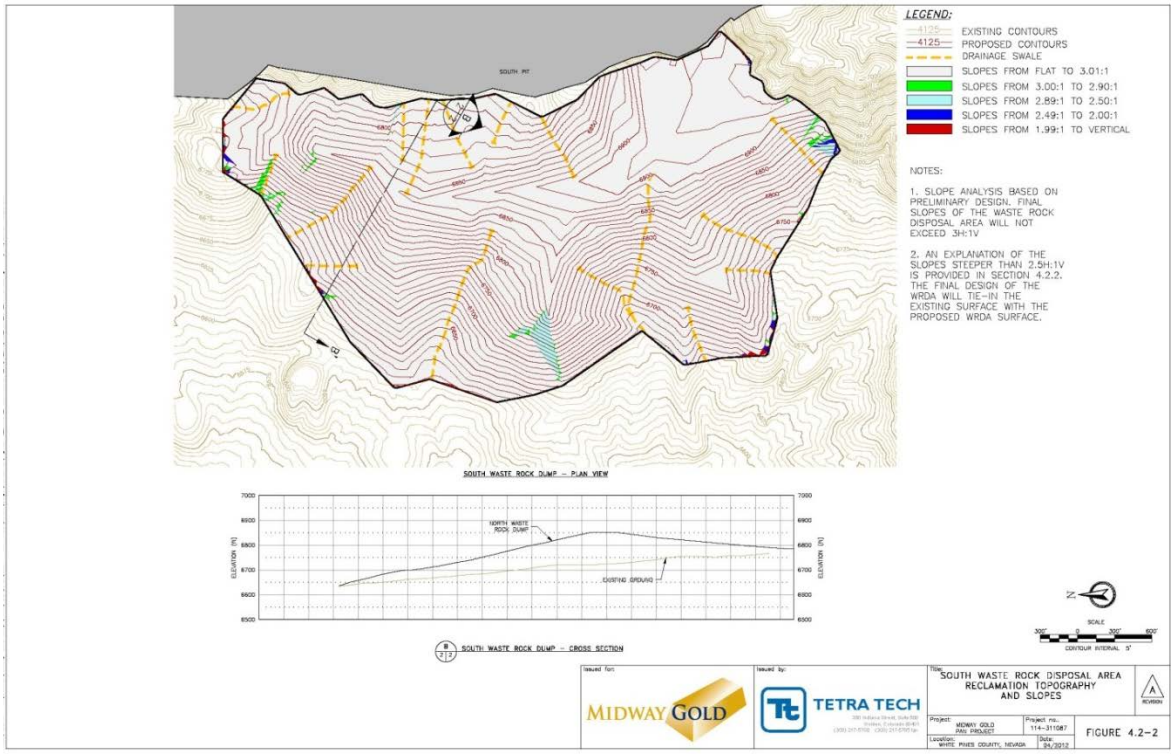


Figure 4 - South WRDA Plan and Cross Section (TetraTech, 2011)

4 WASTE ROCK GEOCHEMISTRY

4.1 SITE WIDE GEOCHEMISTRY SUMMARY

The geochemistry of waste rock and ore from the Pan Project pits is described in detail in Interralogic (2012) including historical data, sampling frequency and locations, and complete data sets. Table 2 summarizes the historical and current data collected for the project. The following is a summary of the geochemical characteristics of the Pan Project rock types.

The Pan deposit is hosted in gently folded Devonian-Mississippian aged marine limestone and siltstone of the Devils Gate and Pilot Shale formations. Gold occurs as sub-microscopic particles disseminated within the limestone and siltstones (Gustavson Associates, 2010). In addition to the Pilot Shale Formation and Devils Gate Formation, other dominant rock types at the project site include Solution Breccia and Volcanic Tuff. Alteration is primarily argillic and siliceous, with decalcification of the limestones.

The dominant rock types on site have been characterized to assess their acid-generating and metals-leaching potential. Tests have included the following:

- Acid base accounting (ABA) and Leco carbon and sulfur speciation analysis of approximately 600 drill-core pulp samples collected in 2007, 2008, and 2010.
- Confirmatory/validation testing of a subset of samples from the 2010 core drilling program for ABA parameters using the Nevada hot water rinse procedure.
- Whole rock analysis of approximately 380 pulp samples collected in 2007 and 2008; and
- Metals leaching tests using the meteoric water mobility procedure (MWMP) for 16 samples collected in 2010.
- Nine humidity cell tests covering all major waste rock types were completed in 2011/2012.

Table 2 - Geochemical Data Sources and Sample Types

Laboratory	Analyses	Method	Number of Samples	Number of Boreholes
2007/2008 Drilling Program				
ALS in Reno, NV	Total C	Leco (C-IR07)	597	72
	Org C	Leco (C-IR06)	597	72
	Total S	Leco (S-IR08)	597	72
	Sulfide S	Leco with sodium carbonate leach (S-IR07)	597	72
	WRA	Aqua Regia + ICPMS analysis	381	68
2010 Drilling Program - Completed Analyses				
ALS in Reno, NV	Total C	Leco (C-IR07)	16	9
	Org C	Leco (C-IR06)	16	9
	Total S	Leco (S-IR08)	16	9
	Sulfide S	Leco with sodium carbonate leach (S-IR07)	16	9
	Sulfate S	S-GRA06	16	9
	Inorg C (CO2)	C-GAS05	16	9
SVL in Kellogg, ID	ABA	NDEP Mod. Sobek with Hot water Leach, NDEP Mod. Sobek with HCl leach, and NP with siderite correction	16	9
	paste pH	ASA 9	16	9
McClelland Laboratories in Sparks, NV (extraction); WETLab in Sparks, NV (analysis)	Metals Leaching	Meteoric Water Mobility Procedure (MWMP)	16	9
Economic Geology Consulting in Reno, NV	Mineralogy	Petrographic (optical) mineralogy, XRD/XRF	16	9
ALS in Reno, NV	WRA	aqua regia + ICP-AES	1154	14
2010 Drilling Program - Analyses Underway				
McClelland Laboratories in Sparks, NV; WETLab in Sparks, NV (analysis)	HCT	Weekly analysis of redox, pH, EC, SO4, acidity, Alk, tot Fe, Fe2+, and Fe3+; Profile II dissolved on weeks 0, 4, 8, 12, 16, and 20; tot rec on weeks 0, 8, and 20	9	9
ALS-Chemex	C & S speciation	Leco methods used previously	9	9
	WRA	4-acid digestion + ICP	9	9
WETLab in Sparks, NV	paste conductivity	standard methods	9	9
Tommy Thompson	Mineralogy		9	9
SVL in Kellogg, ID	NAG	Single additional NAG	9	9
	ABA	NDEP Mod. Sobek with Hot water Leach, NDEP Mod. Sobek with HCl leach, and NP with siderite correction	9	9
	paste pH	standard methods	9	9

NOTES:
WRA: Whole Rock Analysis; HCT: Humidity Cell Tests; NAG: Net Acid Generation; ABA: Acid Base Accounting

Results of ABA testing indicate that the majority of waste rock samples (approximately 75 percent) are considered non-acid generating according to Nevada BLM criteria (having both a net neutralization potential (NNP) greater than 20 T/Kton $CaCO_3$, and a neutralization to acid potential (NP:AP) of greater than 3). Using the NDEP criteria (NP:AP < 1.2) the percentage of samples considered non-acid generating increases to 90 percent. The average sulfide sulfur content of the approximately 600 samples tested is 0.2 percent. Of the primary rock and alteration types, acid generating potential is highest for siliceous Breccia and argillic Tuff; although all potentially acid generating (PAG) materials tended to have low sulfide and low NP, suggesting low overall reactivity. Limonite altered shale also had a high percentage of potentially acid-generating samples, however this is not a primary alteration type and only two samples of this type were analyzed. The low reactivity of the “PAG” samples was verified in the HCTs (detailed below) indicating that although some samples were categorized as “PAG”, these materials are not expected to generate acid when weathered and leached.

Results of MWMP testing suggest an overall low metals-leaching potential, with arsenic and thallium having some leaching potential of the parameters tested. MWMP tests use a 1:1 rock to water ratio on crushed rock, which is not appropriate for direct application to site-scale conditions in waste rock areas; results can either over or underestimate site concentrations depending on site climate, hydrology, and particle sizes. Seven of the 16 tested samples have MWMP test results for dissolved arsenic slightly above the Nevada reference value of 0.01 mg/L; all other sample rinsates were lower than the Nevada reference value. The average dissolved arsenic concentration for the 16 samples is approximately 0.02 mg/L. Dissolved thallium concentrations from the MWMP test are also above the Nevada reference value of 0.002 mg/L for four of the 16 samples with the remaining samples below the reference value. The average dissolved thallium concentration for the 16 samples is approximately 0.03 mg/L. For other parameters, dissolved concentrations were generally below their respective Nevada reference values, with two or fewer samples above the value. By rock type, Volcanic Tuff and Solution Breccia samples had the highest leached metals concentrations. Of the Solution Breccia samples, argillic alteration samples leached the highest total recoverable arsenic concentrations.

HCT results indicate that the waste rock at the Pan site will not be acid generating and that metals leaching will be limited to an initial flush at relatively low concentrations. None of the nine HCTs went acid; all stabilized with a circumneutral pH and low sulfate concentrations, indicating that the small amount of sulfides present in the samples was not oxidizing. So while the samples were categorized as PAG according to ABA data, actual leaching test data indicate the materials are not going to generate acid in the environment when exposed to air and water.

4.2 WASTE ROCK GEOCHEMISTRY

Tables 3 and 4 show the estimated breakdown of waste rock for the Pan Project based on the 13-year mine plan, by pit and lithologic/alteration types. In general, the North Pan Pit waste rock has significantly less limestone than the South Pan Pit; the North Pan Pit waste rock is dominated by argillic Breccia, argillic Pilot Shale, and siliceous Breccia. The South Pan Pit waste is mostly argillic Breccia, argillic Devil's Gate Limestone, and unaltered Devil's Gate and Pilot Shale. The ABA data reflect this difference in limestone content; some of the materials

from the North Pan Pit have low neutralization potential (NP) and therefore fall into the PAG category while nearly all South Pan Pit materials are highly calcareous and have a high NP.

ABA results for samples from the 2007/2008 and 2010 drilling program are summarized in Tables 3 and 4 for both pits. The average sulfide content of all 601 samples is approximately 0.2 percent, with a maximum sulfide content of 3.15 percent, which is for an ore sample of carbon-altered limestone. This results in a very low average acid potential (AP) of 5.9 ppt (as $CaCO_3$). NP values are high, with an average of 362 ppt (as $CaCO_3$).

Table 3 - Summary of Waste Rock Types and Sample Collection for the North Pan Pit

Rock Type	2016	2017	2018	2019	2020	Total %	Total Tons	Number of ABA Samples*	Number of WRA
Argillic Breccia	4.7%	10.6%	13.1%	13.3%	14.4%	10.8%	2,661,212	62	100
Argillic Devils Gate Limestone	0.0%	0.0%	0.1%	9.5%	12.8%	1.9%	473,125	1	1
Argillic Pilot Shale	17.1%	22.1%	25.2%	26.1%	5.4%	22.3%	5,517,811	2	25
Argillic Fault Zone	0.3%	1.7%	2.4%	1.9%	0.0%	1.6%	403,895	--	--
Argillic Terciary Volcanics	25.6%	0.6%	0.0%	0.0%	0.0%	5.0%	1,235,030	10	11
Argillic Diamond Peak	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	10,511	--	--
Argillic Ely Limestone	0.8%	0.2%	0.0%	0.0%	0.0%	0.2%	55,000	--	--
Siliceous Breccia	25.5%	31.6%	33.1%	33.4%	61.3%	32.0%	7,907,177	61	155
Siliceous Devils Gate Limestone	0.0%	0.0%	0.0%	0.3%	0.1%	0.0%	11,604	1	2
Siliceous Pilot Shale	8.0%	8.2%	9.1%	6.9%	0.8%	8.0%	1,985,954	7	13
Siliceous Ely Limestone	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4,274	--	--
Siliceous Fault Zone	1.2%	0.6%	0.0%	0.0%	0.0%	0.4%	106,869	--	--
Siliceous Terciary Volcanics	1.9%	0.9%	0.0%	0.0%	0.0%	0.7%	163,663	--	--
Devils Gate Limestone	0.0%	0.0%	0.0%	0.6%	3.9%	0.2%	47,500	1	1
Breccia	0.3%	2.3%	0.1%	0.1%	1.0%	0.9%	221,588	9	9
Pilot Shale	1.2%	3.7%	0.3%	0.1%	0.2%	1.6%	389,296	--	--
Fault Zone	1.4%	2.8%	6.3%	6.4%	0.0%	4.1%	1,012,555	--	--
Diamond Peak	12.0%	12.8%	10.2%	1.6%	0.0%	9.7%	2,398,247	--	--
Joanna Limestone	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	3,313	--	--
Terciary Volcanics	0.1%	1.5%	0.0%	0.0%	0.0%	0.5%	122,500	--	--

NOTES:
Rock/Alteration types with total percentage greater than 10% are highlighted red.
* For North Pit waste samples only; Count for breccia samples includes samples logged as solution breccia. Count for argillic samples includes samples logged as clay.

Of the 601 samples, 84 samples are considered PAG based on NDEP guidelines of NP:AP ratio less than 1.2. According to BLM guidelines (NV BLM, 2008, 2010), materials require additional testing to confirm the acid generation potential if either the NP:AP ratio is less than 3, or the NNP is less than 20. For the purposes of this document, samples in this category are designated as "*unconfirmed PAG*" or "UPAG." Based on BLM guidelines, 189 samples are UPAG.

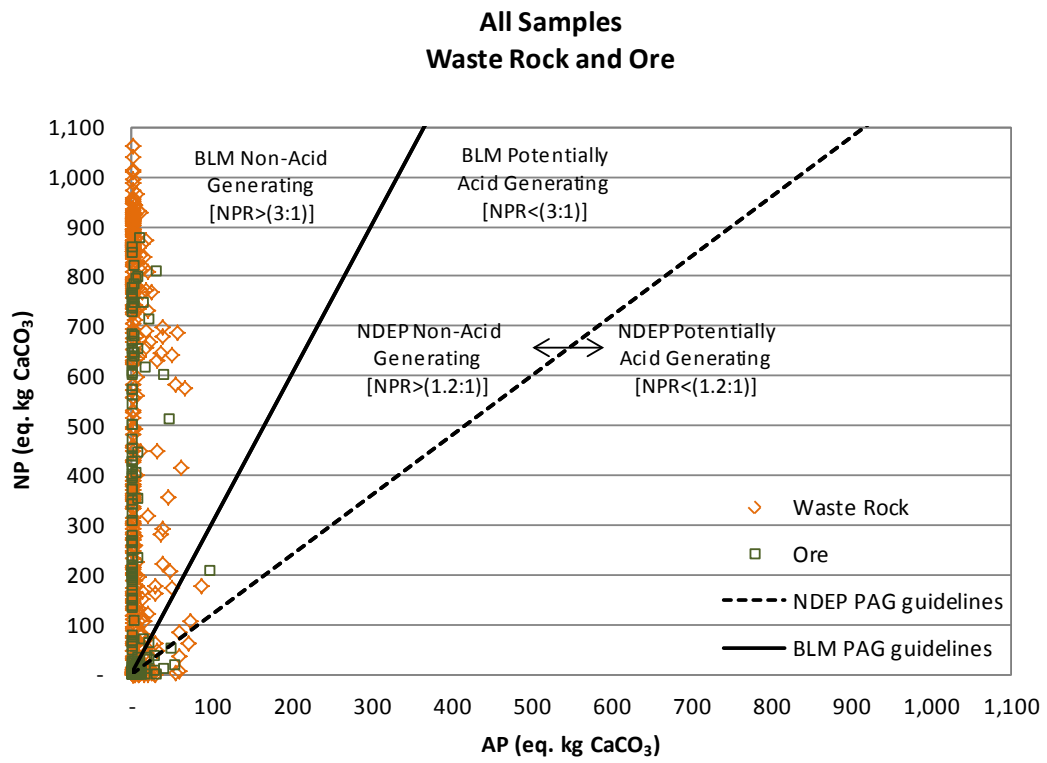
Table 4 - Summary of Waste Rock Types and Sample Collection for the South Pan Pit

Rock Type	2013	2014	2015	2016	Total %	Total Tons	Number of ABA Samples*	Number of WRA Samples*
Siliceous Breccia	0.7%	0.3%	0.5%	1.6%	0.6%	196,643	9	3
Argillic Breccia	7.1%	11.3%	9.3%	14.8%	10.2%	3,352,122	53	95
Argillic Devils Gate Limestone	11.0%	18.2%	29.3%	41.8%	22.8%	7,455,625	7	10
Argillic Pilot Shale	6.0%	8.7%	13.0%	1.8%	8.6%	2,819,316	23	39
Siliceous Devils Gate Limestone	0.0%	0.0%	0.0%	0.0%	0.0%	5,497	2	0
Devils Gate Limestone	50.5%	45.2%	41.8%	39.7%	44.6%	14,603,750	14	37
Breccia	3.1%	0.4%	0.1%	0.2%	0.9%	282,540	8	13
Pilot Shale	20.9%	15.8%	6.0%	0.0%	12.1%	3,955,494	4	38
Joanna Limestone	0.0%	0.0%	0.0%	0.0%	0.0%	1,250	--	--
Terciary Volcanics	0.6%	0.0%	0.0%	0.0%	0.1%	37,870	--	--

NOTES:
Rock/Alteration types with total percentage greater than 10% are highlighted red.
* For South Pit waste samples only; Count for breccia samples includes samples logged as solution breccia and hydrothermal breccia. Count for argillic samples includes samples logged as clay.

Figure 5 presents a scatter plot of NP vs. AP for all samples broken down by waste/ore and by pit area, and Figure 6 presents a histogram of NNPs. The scatter plots show clearly the excess NP compared to AP in nearly all samples with the only PAG designated samples plotting near the origin (i.e., low NP and low AP). The histograms indicate show two peaks; one at high NNP (non acid generating) and another near zero NNP. The near-zero NNP data represent those samples with both low NP and low AP which are low-reactivity materials as shown by the HCT results. As highlighted in yellow on Figure 7, the majority of these UPAG waste rock samples have low total sulfur (less than 1.5 percent). These UPAG samples are generally relatively inert, having low AP and low NP. This is supported by the HCT results, which show these UPAG materials do not generate acid upon exposure to air and water.

As shown in Table 5 and Figure 5, the North Pan Pit area has more UPAG samples than the South Pan Pit. This result is expected, as limestone is more prevalent in the South Pan Pit area. Approximately 68 percent of the waste rock from the South Pan Pit is limestone, compared to 2 percent from the North Pan Pit.



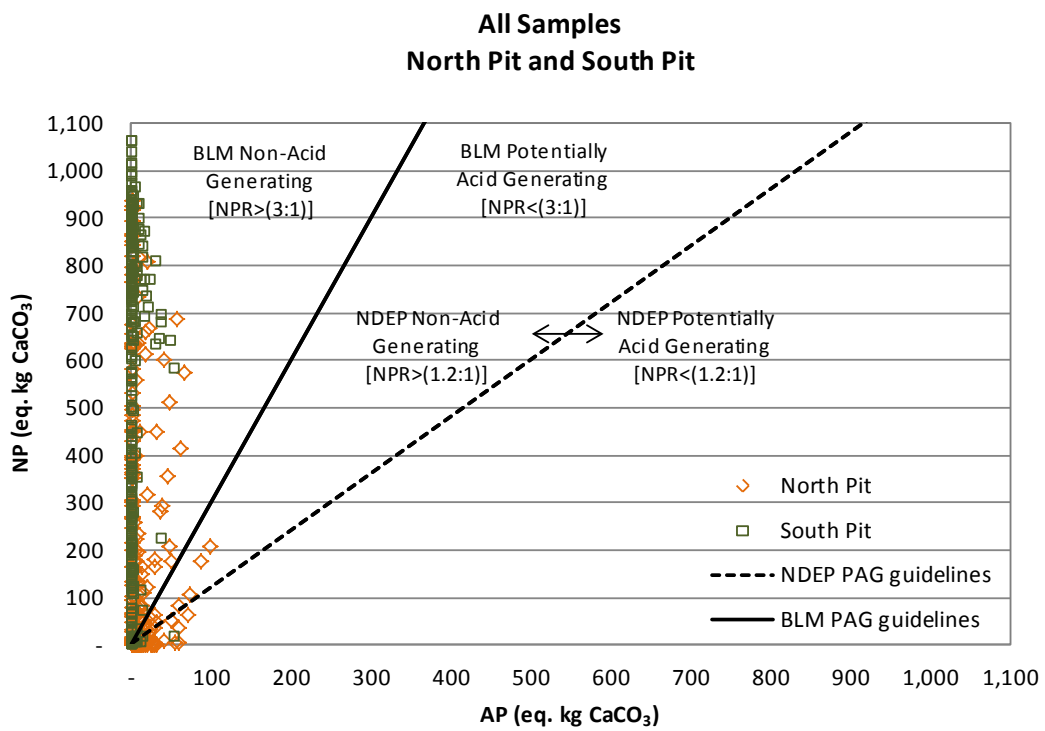
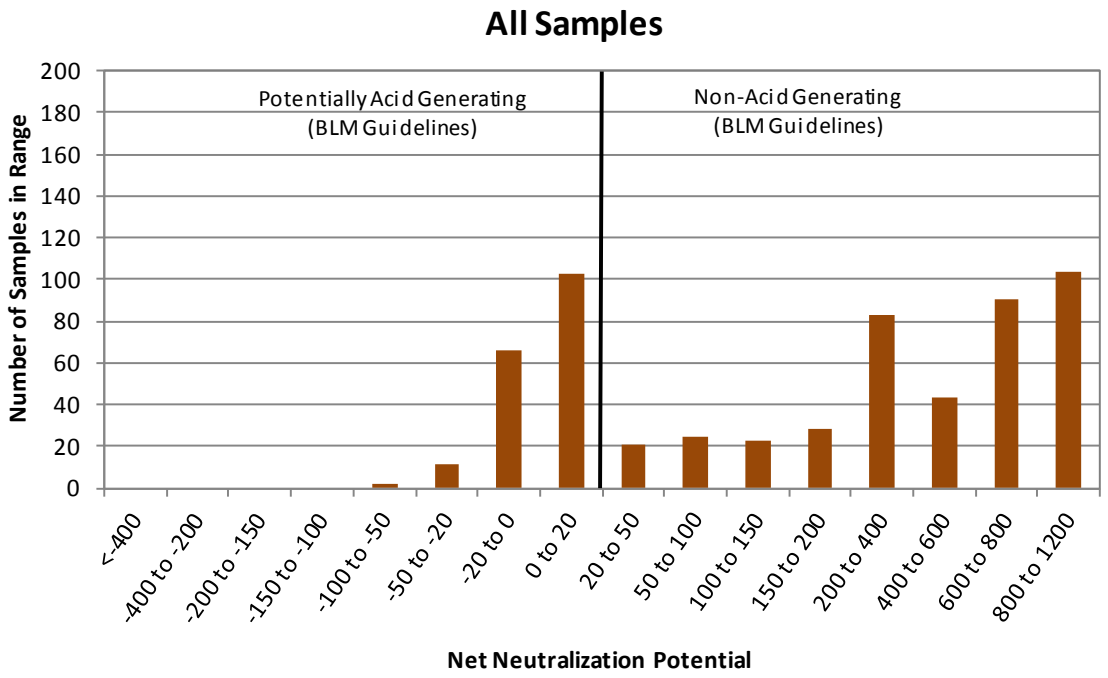


Figure 5 - NP:AP Scatter Plots



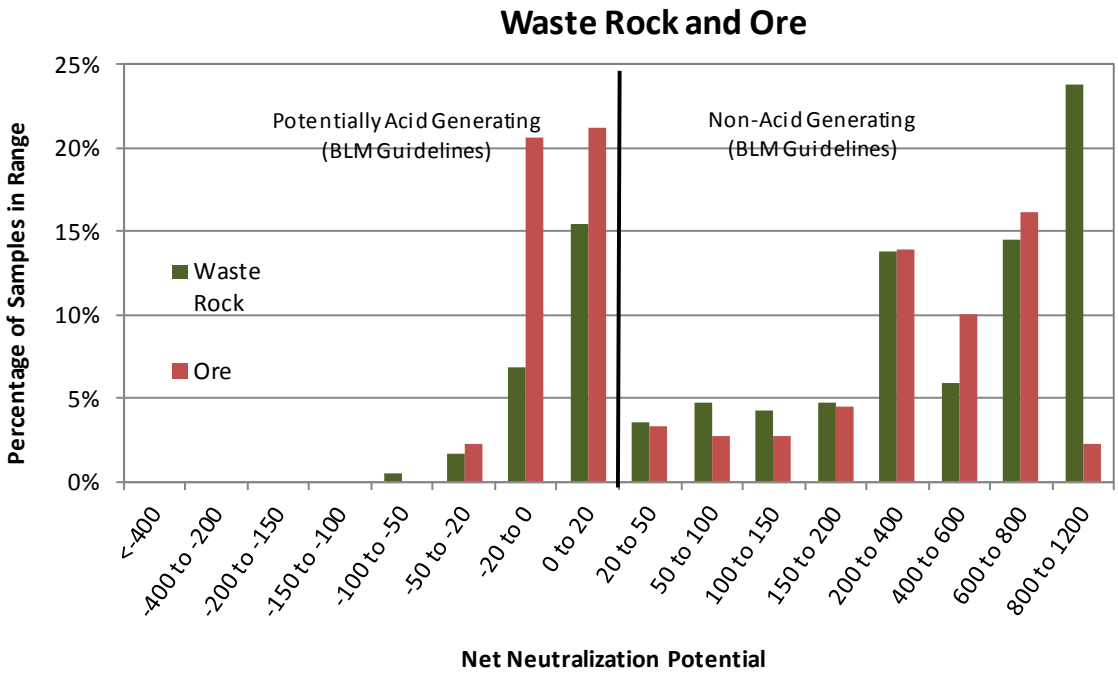


Figure 6 - NNP Histograms

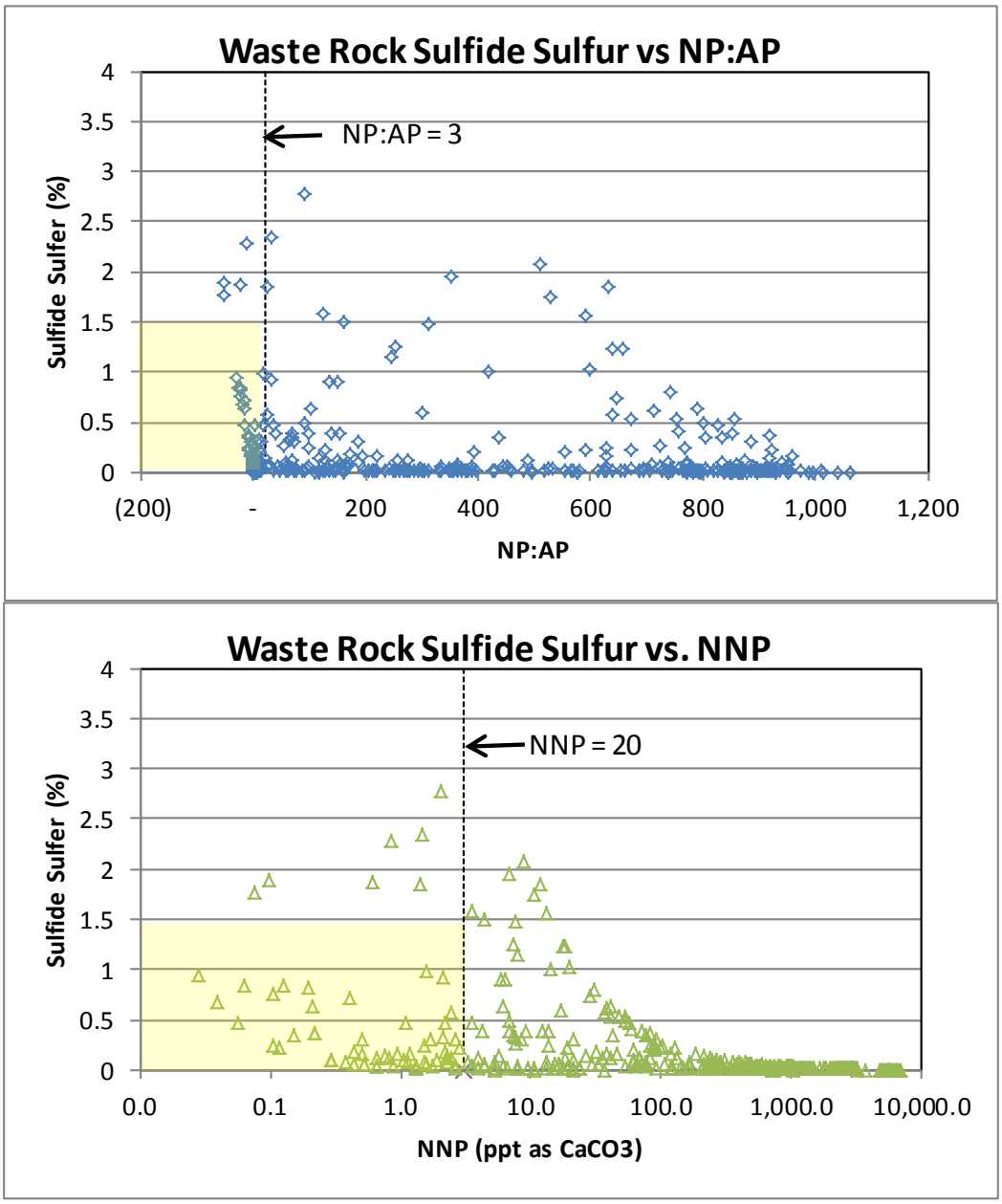


Figure 7 - Total Sulfur, ABA Scatter Plots

Table 5 - ABA Data Summary

Sample Types	Carbon Species (wt %)			Sulfur Species (wt %)			AP[1]	NP	NP:AP	NNP
	Total	Organic	Carbonate	Total	Sulfide	Sulfate	PPT as $CaCO_3$	PPT as $CaCO_3$		PPT as $CaCO_3$
All	4.47	0.13	4.35	0.46	0.19	0.27	5.87	362	828	356
Ore	3.02	0.11	2.91	0.66	0.19	0.47	5.87	242	381	236
Waste	5.10	0.14	4.96	0.38	0.19	0.19	5.87	414	1021	408
North Waste	2.82	0.17	2.65	0.48	0.29	0.20	9.03	221	397	212
South Waste	7.33	0.11	7.22	0.27	0.09	0.18	2.78	602	1630	599

1 - AP based on sulfide sulfur

The following observations regarding acid rock drainage (ARD) and metals leaching (ML) potential were derived from statistics developed on the total number of historical samples by rock type and location (North or South Pan Pit). Considering the relatively high number of ABA samples and the representative distribution of samples, this approach is considered representative of the bulk of the waste rock for this phase of the project. The sample distribution will likely be refined using the block model as it is updated with the most recent data.

South Pan Pit Waste Rock Characteristics:

- Very low sulfur content (average sulfide sulfur less than 0.1 percent)
- Only 2 out of 169 samples were categorized as PAG according to NDEP guidelines and 18 out of 169 according to BLM guidelines.
- The average NP value is very high (600 T/1000T $CaCO_3$) due to the high percentage of limestone present in the South Pan Pit.
- ML potential is low according to HCT and MWMP testing; about half of the waste rock consists of Devil's Gate Limestone which showed no exceedances of Nevada reference standards in the MWMP tests
- The remaining waste rock indicated low ML with low-level exceedances by some metals including arsenic (0.019 to 0.039 mg/L) of the Nevada reference standards in the MWMP test.

North Pan Pit Waste Rock Characteristics:

- Low sulfur content (average sulfide sulfur less than 0.3 percent) indicating low levels of potential reactivity.

- 40 out of 182 samples (22 percent) were categorized as PAG according to NDEP guidelines and 85 out of 182 (47 percent) according to BLM guidelines. The majority of the waste rock is not expected to have a high potential for acid generation and metal leaching due to low sulfide sulfur content (average of 0.44 percent) and are not expected to generate significant acidity and sulfate upon weathering. This expectation is supported by results from the humidity cell testing that indicate neutral pH conditions and low to moderate metal leaching rates.
- The overall average NP of waste rock samples is high (215 T/1000T as $CaCO_3$) due to the high percentage of limestone and other carbonate-rich rocks present in the North Pan Pit waste rock.
- ML potential is low according to MWMP and HCT results; the siliceous Breccia, comprising about a third of all waste rock in the North Pan Pit, showed no exceedances of Nevada references standards in the MWMP
- The remaining waste rock indicated low ML with low-level exceedance by some metals including arsenic (0.02 to 0.034 mg/L) of the Nevada reference standards in the MWMP test.

5 PAN SITE WASTE ROCK MANAGEMENT

The following site characteristics present opportunities to manage waste rock such that potential impacts are minimized:

- very thick (> 600 ft) vadose zone beneath the site
- low reactivity and low ML potential of the waste rock
- high net evaporation climate
- presence of abundant high-carbonate material on site

The following waste rock management strategy incorporates these site-specific conditions to the extent possible to protect the environment and provide long-term storage of generated waste rock.

5.1 WASTE ROCK MANAGEMENT PLAN

Although some mining of construction materials will occur initially from the North Pan Pit, the mine plan indicates full scale mining of the South Pan Pit first, with the majority of this material being good quality rock with very high neutralizing potential and moderate to low ML potential. Full scale mining of the North Pan Pit will be mined second, approximately 4 to 8 years after the start of mining in the South Pan Pit, with the majority of the material also being good quality (low ARD and low ML potential). However, ABA data suggest some low sulfur material that also has low NP has the potential to generate low levels of sulfate, although acidic conditions were not observed based on humidity cell tests. Neutral pH leaching of arsenic and thallium does occur but at low rates and continued to decrease through time in humidity cell test results.

Waste rock management involves the following components for both the North and South WRDA:

- Run-of-mine placement of waste rock using haul trucks on prepared (cleared and grubbed) subgrade
- Concurrent reclamation of WRDAs to limit exposure of open disposal areas to the environment
- Closure of the WRDAs in a geomorphic design to enhance runoff similar to pre-mining natural conditions
- Capping the WRDAs with a growth medium layer capable of sustaining a vegetative cover.
- The growth medium layer characteristics include:
    - Good quality, local growth medium to sustain a plant community including grasses and shrubs with deep rooting depths;
    - Thickness between 12 and 14 inches to support a plant community, provide sufficient material to self-armor slopes and prevent erosion, enhance runoff and limit infiltration.

Existing data do not indicate the need for rigorous selective handling such as active blending or encapsulation other than the PAG designated areas of the North WRDA, if necessary. All geochemistry data to date (including humidity cell testing results) suggest no actual acid

generation by any samples, including those designated as PAG from acid-base accounting results; however, if future humidity cell test results indicate ARD and/or significant ML potential in localized zones of the waste rock, the block model will be refined to the extent possible to identify problematic waste rock zones. If zones are in manageable “blocks”, these zones could be targeted for operational identification (i.e., blast hole sampling and on-site analysis) and placement in PAG areas. If however, future testing indicates negligible acid generation of these North Pan Pit waste rock materials, all material would be placed in a comingled (e.g., run of mine) manner with confirmatory operational sampling and analysis.

5.2 ADAPTIVE MANAGEMENT PLAN

The existing data indicate that the North Pan Pit waste rock is not acid generating. However, before the North Pan Pit is mined, a supplemental waste rock characterization plan will be implemented with a focus on the North Pan Pit waste rock that has low NP. The purpose of the program is to build on, and verify, previous findings regarding the low NP waste material. Between 5 and 10 samples will be selected for rigorous testing consisting of the following:

- Static testing
    - Acid base accounting
    - Whole rock chemistry
    - Mineralogy (XRD and optical)
    - MWMP
- Humidity cell testing

Test results will be evaluated to determine the potential for acid generation and metals leaching. If present, the PAG material type will be identified in the geologic/block model for the mine and a determination will be made as to the possibility of identifying and handling that material as a discrete block (i.e., it is present in sufficient concentration and quantities to be identified and marked as part of the mining operation). This process will be conducted in communication with NDEP and BLM, as required.

5.2.1 PAG WASTE ROCK ADAPTIVE MANAGEMENT FOR THE NORTH PAN PIT

If the criteria are met in the previous section and material is identified for selective handling, the following components will be added to the North WRDA:

- Designation of an area within the North WRDA for targeted placement of PAG material (i.e., PAG cell).
- Conducting an attenuation study of soils beneath and/or downgradient of the North WRDA.
- Mechanized spreading (e.g., using bulldozers) of any PAG material in the designated PAG cell(s) from the North Pan Pit to reduce vertical accumulation of this material in concentrated areas. This will limit contact by any infiltration migrating vertically through the waste rock.
- A 2.5-foot thick, good quality (e.g., non ARD, non ML), run-of-mine high-carbonate material layer under the topsoil cover layer in the designated PAG area with the following purposes:
    - To minimize seepage into the PAG area. For additional information on cover design and thickness, refer to Dwyer (2012).
    - To enhance the alkalinity of any seepage that percolates through the soil layer by dissolution of carbonate minerals
    - To provide a good quality (i.e., non-toxic) substrate for the soil layer and vegetation such that rooting depths will be enhanced (i.e., roots can grow into the high-carbonate rock below).

5.3 OPERATIONAL WASTE ROCK SAMPLING AND ANALYSIS

5.3.1 QUARTERLY MONITORING

Grab samples of waste rock will be collected quarterly of each major rock type encountered. Samples will be submitted for MWMP and ABA testing.

5.3.2 BLAST HOLE SAMPLING AND ANALYSIS

The ore production rate for the Pan Mine is planned to be 17,000 short tons (tons) per day. The average, life-of-mine waste production rate is 29,000 tons per day. For short durations, the combined ore and waste production may be as high as 64,000 tons per day.

A simple grade control system will be utilized to insure that ore and waste reach their appropriate destinations. Rock with a gold content of above economic quantities will be placed on a leach pad. All other rock being removed to access the ore will be placed in one of several WRDAs. Waste rock will be placed based upon assay analysis of drill cuttings from blast holes and geologic interpretation.

Preliminary blast design calculations utilizing 20 foot benches and 6-inch diameter blast holes indicate that each blast hole will break loose close to 400 tons of rock. Each hole will also produce about 750 pounds of drill cuttings that may be tested to represent the blasted rock from the hole. Normally only a very small, but representative, portion of the cuttings is used for testing the gold content needed for grade control.

The grade control procedure will start with surveying and marking the locations of blast holes. Wooden stakes with two identical bar code tags will be placed by a surveyor at the proposed collar locations of every planned blast hole. The associated bar code numbers will also be place in a database with the surveyed coordinates for each hole.

During the drilling of a blast hole, cuttings will be pneumatically transported to a mechanical splitter contained on the drill. A small but representative sample of the cuttings is placed into a sample bag as the drilling progresses. After a hole is complete, one of the bar code tags is attached to the sample bag. The other bar-code tag is attached to a wooden stake which is driven into the ground next to the completed blast hole. The sample bag of cuttings may be placed next to the blast hole and collected a short time thereafter by a grade control geologist. Every blast hole will be sampled for its gold content.

All blast hole samples will be transported to an onsite assay testing facility. At the facility, the sample bar codes will be scanned. The samples will then be completely crushed, mixed and a small portion extracted. The small split will then be pulverized and subjected to a hot cyanide

shake test to determine its soluble gold content. If the gold content is found to be above an appropriate cut-off grade, a portion of the sample may be additionally tested by a fire assay with an atomic absorption finish to determine its total gold content. All results will be placed in a database with assigned bar-code tracking numbers and hole collar coordinates.

The blast hole database and geologic interpretation provided by the grade control geologist will be used to define the boundaries of ore and waste. Spatial assay data from the database is used to mathematically determine the gold content of portions of a bench. Such interpolation methods as kriging or inverse distance may be applied in the determination. The boundaries of ore and waste will be further defined by incorporating observed geologic characteristics such as the rock type and alteration. The grade control geologist will provide a map with grade boundaries to surveyors. The surveyors will use the map to place wooden stakes into the broken rock after it is blasted. The staked boundaries will then be used to determine the destination of the broken rock after it is loaded into haul trucks. Ore and waste will have identifiable stakes.

The waste rock generated from the South Pan Pit has been shown to be benign from an acid generation/ metals leaching standpoint. No selective handling is required for this material and therefore no additional blast hole sampling is planned for additional, on-site geochemical evaluation. Waste rock will be placed in the South WRDA as received directly from the blast area

In the case of the North Pan Pit, the adaptive management plan may require selective handling of a subset of the material depending on the results of the confirmatory geochemical testing planned for the “inert” waste rock from the North Pan Pit. Testing is planned to verify material is inert and does not warrant selective handling and placement in PAG cells. If material is identified that is not inert, additional, waste rock blast hole sampling and analysis will be conducted to identify this material.

The additional waste rock blast hole sampling/analysis will be done on composites from a minimum of 10 percent of the blast holes identified to be within waste rock. Intra- and/or inter-hole composites may be made depending on the size and type of the waste rock zone. Samples will be tested to identify the PAG material either at the on-site assay laboratory and/or

an off-site commercial laboratory. Midway will select appropriate testing methods for the PAG material, if it is identified in the confirmatory testing program. Typical tests for operational waste handling include:

- Visual inspection
- Paste pH
- NAG pH
- Leco carbon/sulfur

6 WASTE ROCK DISPOSAL AREA CLOSURE STRATEGY

This section summarizes the closure of the WRDAs. Additional detail can be found in Tetratech (2011). The following components comprise the WRDA closure at Pan:

- Diversion channels will be constructed up-gradient of the WRDAs to divert and safely pass flows from the 100-year, 24-hour storm event.
- WRDAs will be constructed at final grade, the majority of which will be reclaimed concurrently during the production period.
- Concurrent reclamation of the WRDAs will provide opportunities to improve reclamation practices over the course of the mine-life.
- As designed, the WRDAs will be constructed to achieve an overall stable hydrologic configuration over time by creating macrotopographic variability (ridges and swales) to improve the distribution of surface runoff and create “natural” channel morphology for the rapid conveyance of runoff from the surface of the WRDAs. This design approach is often referred to as “geomorphic” design.
- The final surfaces on the WRDAs are designed to:
    - Promote rapid conveyance of stormwater;
    - Prevent surface ponding;
    - Disperse rather than concentrate runoff;
    - Promote long-term stability over time and limit erosion and channel scour; and
    - Promote establishment of perennial, self-sustaining and diverse vegetation communities that contain deep rooted and drought tolerant species.

- A soil cover will be installed on the surface of the WRDAs to reduce percolation of precipitation into the waste rock. The cover includes a single-layer cover that balances the percolation of meteoric waters through the cover with the water storage necessary to establish vegetation, while avoiding exposure of mine waste due to erosion. The thickness of the soil cover will vary according to landscape and physiographic position but is expected to be 12- to 14-inches thick, subject to future refinement.
- Approximately one million cubic yards of soil will be removed and directly placed (without stockpiling) and redistributed on portions of the contoured WRDAs (live handling soil). Live handling soil is commonly recognized as a means of encouraging rapid volunteer plant growth, by minimizing the loss of seed, vegetative and microbial propagule viability.
- Soil surfaces will be roughened (surface pitting and roughening, dozer basins, discontinuous contour furrows) at the time of concurrent and final reclamation to reduce/attenuate runoff volumes, slope lengths and gradients, and provide for "intracatchment" sediment retention.
- Three different seed mixtures and sagebrush seedlings will be applied to the WRDAs following redistribution of the soil cover according to aspect, elevation and the level of long-term erosion control needed. The seed mixtures are composed of native grass, and herbaceous and woody shrub species that are adapted to the substrate conditions and climate.
- Erosion and sediment control best management practices (BMPs) will be maintained from immediately prior to surface disturbance through final bond release.

HCT results indicate that PAG materials are not reactive and may not require special handling. The South WRDA material is not expected to contain significant quantities of PAG rock. The material will be dominated by limestone (about 70 percent) and will not require special handling. The North WRDA has non-PAG material and possibly some PAG material. An adaptive approach will be followed to determine the need for selective handling and placement of this material in a designated PAG cell within the North WRDA (described above). As this facility is not planned to be constructed until at least the 4th year of active mining, more than sufficient time is available for this approach.

The soil growth medium component of the cover on both the North and South WRDAs is designed to provide for good vegetation growth, enhanced runoff, evapotranspiration, and to

reduce deep infiltration. The cover design (described fully in Tetratech, 2011) relied on optimizing the soil layer thickness based on evapotranspiration, self-armoring, vegetation requirements, and erosion considerations. Detailed soil surveys (Tetratech, 2011) indicate there is sufficient on-site material suitable for a soil cover that meets these design requirements. Detailed hydrological testing of on-site soils is underway and will form the basis of cover modeling to refine the cover design, if necessary.

Observations at Copper Basin (Pers. Comm., Sauer, 2011) indicate that roots readily extend into the waste rock below if waste rock does not contain toxic levels of metals thereby enhancing evapotranspiration. In the case of Pan, run-of-mine waste rock is generally good quality with relatively low metals content and will be suitable for a base for the soil cover. These materials will allow roots to develop below the soil layer into underlying materials thereby enhancing evapotranspiration and maintaining a healthy and sustainable plant community.

7 REFERENCES

BLM. 2010. Nevada Bureau of Land Management Rock Characterization and Water Resources Analysis Guidance for Mining Activities. Instruction Memorandum No. NV-2010-014. January 8, 2010.

Dwyer Engineering LLC. 2012. Modeling Report in Support of Cover Design, Midway Gold, Eureka, NV. January, 2012.

Gustavson Associates. 2010. NI 43-101 Preliminary Economic Assessment of the Pan Gold Project, White Pine County, Nevada, July 20.

Interralogic. 2012. Baseline Geochemistry Report – Pan Project, White Pine, NV. Report submitted to MGC, June, 2012.

Sauer, H. 2011. Personal Communication with Henry Sauer in reference to his observations of cover performance at Copper Basin, Nevada.

Tetratech. 2011. Reclamation Plan – Pan Mine, Eureka, NV. Report prepared for Midway Gold Corporation, July, 2011.

Appendix 2B
Stormwater Management Plan

Pan Project
Stormwater Management Plan

January 2013

Midway Gold US Inc.
Point at Inverness Suite 280
8310 South Valley Highway
Englewood, Colorado 80112

And

705 Avenue K
Ely, Nevada 80301

TABLE OF CONTENTS

1 INTRODUCTION 1
1.1 Site Information 1
1.2 Contact Information / Responsible Parties 1
1.3 Past and Authorized Operations 1
1.4 Proposed Operations 2
2 SITE CONDITIONS 3
2.1 Climate 3
2.2 Hydrology 3
3 GENERAL BEST MANAGEMENT PRACTICES 4
3.1 Structural Control BMPs 4
3.2 Non-Structural Control BMPs 5
3.2.1 Good Housekeeping 5
3.2.2 Routine Inspections 5
3.2.3 Maintenance 6
3.2.4 Training 6
4 POTENTIAL SOURCES OF STORMWATER POLLUTION 8
4.1 Pits 9
4.1.1 Stormwater Controls and Best Management Practices 9
4.2 Waste Rock Disposal Areas 9
4.2.1 Stormwater Controls and Best Management Practices 10
4.3 Process Facilities 10
4.3.1 Stormwater Controls and Best Management Practices 11
4.4 Haul Roads, Secondary Roads, and Conveyor Corridors 12
4.4.1 Stormwater Controls and Best Management Practices 12
4.5 Growth Medium and Woody Debris Stockpiles 12
4.5.1 Stormwater Controls and Best Management Practices 12
4.6 Borrow Areas 12
4.6.1 Stormwater Controls and Best Management Practices 13
4.7 Exploration Activities 13
4.7.1 Stormwater Controls and Best Management Practices 13
4.8 Reagent, Fuel, and Explosives Storage 13
4.8.1 Stormwater Controls and Best Management Practices 14
4.9 Buildings 14
4.9.1 Stormwater Controls and Best Management Practices 15
4.10 Waste Management Facilities 15
4.10.1 Stormwater Controls and Best Management Practices 15
4.11 Ready Line 16
4.11.1 Stormwater Controls and Best Management Practices 16
4.12 Yards and Inter-facility Disturbance 16

4.12.1 Stormwater Controls and Best Management Practices 17
4.13 Construction Activities 17
4.13.1 Stormwater Controls and Best Management Practices 17
5 RECLAMATION AND REVEGETATION 19
6 NON STORMWATER DISCHARGE MANAGEMENT 20
7 MONITORING AND REPORTING 21
8 CHANGES TO STORMWATER MANAGEMENT 22
9 REFERENCES 23

LIST OF TABLES

Table 1: Training Sessions 7
Table 2: Summary of Potential Pollution Sources 8
Table 3: Inspection and Monitoring Requirements (for Non-Construction Operations) 21

FIGURES

Figure 1: Location Map
Figure 2: Land Status Map
Figure 3: Proposed Facilities

1 INTRODUCTION

The purpose of this stormwater management plan is to identify stormwater drainages and pathways, identify potential pollution sources, and describe how potential impacts from sources are reduced or managed. This stormwater management plan has been prepared to provide an overview of site conditions, facilities, potential on-site sources of impact to natural drainages from stormwater migration, and best management practices (BMPs) to reduce potential impacts and control or mitigate stormwater migration.

1.1 Site Information

The Pan Mine Project (the Project) will be operated by Midway Gold US Inc. (Midway) on Bureau of Land Management (BLM)-administered public lands. The project is located in White Pine County, Nevada, approximately 20 miles southeast of Eureka. Figure 1 shows the general Project location. The Project is located in all or parts of the following sections (Mount Diablo Base & Meridian):

- Township 18 North, Range 55 East – Section 34
- Township 17 North, Range 55 East – Sections 3, 10, 13, 14, 15, 22, 23, 24, 25, 26, 27, 34, 35, and 36
- Township 16 North, Range 55 East – Sections 1, 2, 3, 11, 12, 13, 14, 23, and 24

1.2 Contact Information / Responsible Parties

The project stormwater management team is responsible for updating this stormwater management plan, implementation of BMPs, and modification to this plan whenever there is a change in construction, operation, or maintenance that affects potential pollution sources, discharge pathways, or BMPs. The stormwater management team will consist of the mine manager, environmental manager, and/or environmental coordinator.

The current mailing address for Project personnel is:

705 Avenue K
Ely, Nevada 80301

1.3 Past and Authorized Operations

The Pan deposit has been explored by several exploration and/or mining companies. Exploration activity has taken place in the general region since 1978 but mining of the Pan deposit has not occurred. Past exploration activities have resulted in existing surface disturbance some of which has been reclaimed.

An exploration plan was submitted on behalf of Castleworth Ventures, Inc. (CVI) for exploration drilling at the Project site in 2004. A Finding of No Significant Impact (FONSI) to disturb up to 25 acres for drill pads and roads was signed in April 2004. An amendment to the 2004 exploration plan was submitted in 2011 on behalf of Midway, which proposed an additional 75 acres of disturbance to develop a new access road and construct additional drill pads and drill roads. An EA for this amendment was completed in April 2011 and a FONSI was issued in July 2011.

Existing disturbances consist primarily of access roads, drill roads and pads, geotechnical soils pits and trenches, and a laydown area. The authorized exploration operations for the Project are ongoing and include:

- Road building (main access road and drill roads);
- Reverse circulation (RC) and core exploration drilling and drill pad construction;
- Trench excavation and borehole augers for obtaining bulk metallurgical samples and soil samples;
- Construction and monitoring of groundwater monitoring wells;
- Development of a staging area for temporary storage of drilling materials and equipment; and
- Provision of temporary portable sanitation facilities.

1.4 Proposed Operations

Midway has developed a Plan of Operations (PoO) based on a 13-year mine life using the most up-to-date information available. Midway will continue to collect information during ongoing drilling and geological exploration activities over the mine life which may result in revisions to the information submitted in this Plan. This stormwater management plan will be amended as necessary.

Proposed activities will occur within either the Plan area or the Mine area as shown on Figure 2, and will include:

- Expanding the 2011 exploration plan area to the “Plan area”;
- Establishing a “Mine area” within the Plan area consisting of:
    - Two main open pits, the North Pan Pit and the South Pan Pit;
    - Four satellite pits: the Black Stallion, North Syncline, Syncline, and South Syncline pits;
    - Crushing facilities and associated stockpiles;
    - Two waste rock disposal areas (WRDAs);
    - Heap leach pad, conveyors, processing facilities, and ponds;
    - Water supply wells and delivery/storage system;
    - Haul and secondary roads;
    - Exploration within the Mine area;
    - Ancillary facilities including: power supply; stormwater controls; reagent, fuel, and explosives storage; buildings including administration, laboratory, security, warehouse, coreshed, and associated parking; potable water supply and septic systems; maintenance shop; ready line; light vehicle wash; communications facilities; helicopter pad; growth medium and woody debris stockpiles; class III-waivered landfill; area to store petroleum contaminated soils; monitoring wells; borrow areas; fencing; and yards and inter-facility disturbance;
- Undertake closure and reclamation activities.

2 SITE CONDITIONS

2.1 Climate

The climate in the area is typical for the high desert of central Nevada and the Basin and Range province. Climate data from Eureka, Nevada averages 11.85 inches of precipitation per year, with average temperatures ranging from 17 degrees F in the winter to 86.4 degrees F in the summer. Daytime temperatures exceeding 90 degrees F during July and August are common. Average annual pan evaporation at the Ruby Lake Station is 51.5 inches (Western Regional Climate Center 2008).

2.2 Hydrology

The Project is located in the Central Nevada Hydrographic region within the Newark Valley watershed. Newark valley is internally drained, covers 801 square miles and is undesignated. In general, most of the basin-wide recharge in Nevada is derived from precipitation falling on higher elevations.

Snowmelt and rain falling on the mountain ranges flows down slope within the surface drainage channels towards the valleys and becomes recharge as it flows across the porous material on the upper part of alluvial fans. Most of the recharge, therefore, occurs to the alluvium underlying the piedmont slope along the margins of the basin. A lesser amount of recharge also occurs to the bedrock at higher elevations. Eakin (1960) estimated recharge in the Newark Valley to be 18,000 acre feet per year (ac-ft/yr), and discharge at 19,000 ac-ft/yr. Upgradient recharge to bedrock occurs mainly along structurally controlled stream channels in the lower parts of the ranges where the overall gradient of the streams is lower and where there is an increasing thickness of colluvium flanking the channel.

Although recharge rates to bedrock may be locally significant, the recharge volume to bedrock is generally small in comparison to recharge to alluvium. At lower elevations, close to the valley floor, recharge is expected to be negligible because of the lower precipitation, finer-grained alluvial soils, and higher evapotranspiration rates. Regional groundwater flow in the Newark Basin is generally from recharge areas along the margins of the valley towards the center of the valley where a northward component to groundwater flow along the axis of the valley is present.

No perennial streams or springs are located within the Project area. A waters of the United States survey was conducted within the Plan area. No waters of the United States were identified. Approximately 3.4 acres of non-jurisdictional waters were identified in the Project area. All were ephemeral, isolated drainages (JBR 2011).

3 GENERAL BEST MANAGEMENT PRACTICES

Midway will implement BMPs to manage the flow of stormwater, prevent uncontrolled migration, and minimize erosion and sediment transport from Project facilities and disturbed areas during construction, operations, and initial stages of reclamation. The general BMPs covered in this section include structural and non-structural controls:

3.1 Structural Control BMPs

Structural stormwater controls include stormwater diversion and erosion/sediment control. Structural controls minimize or mitigate the effects of stormwater velocity and pathway. Structural controls are either permanent as part of the overall stormwater management plan for the life of the Project and post- reclamation, or are temporary as part of stormwater management during construction and development of facilities and during operations. Specifications and cross-sectional drawings typical of temporary and permanent diversion channels for various facilities are provided in separate design reports.

Design of control structures (except for short-term construction projects) will be based on the required storm events. Some of these structures are permanent and will remain throughout the life of the Project and some are temporary and will remain for a limited number of years of operation. In general, stormwater diversion and erosion/sediment structural control BMPs include the following types.

- *Up-Gradient Control*: Diversion of stormwater that originates up-gradient of roads, disturbed areas, and other potential pollution sources will be accomplished by using a combination of berms, channels, culverts, and water bars. Erosion and sediment controls include rip-rap channel lining, synthetic channel lining, and sediment basins. These erosion and sediment controls will slow velocity and settle out sediment. Where diversion channels are narrow or at relatively steeper grades, rip-rap and/or synthetic lining will be installed if necessary to slow the velocity and scouring effect of the stormwater.
- *Down-Gradient Control*: Down-gradient diversion of stormwater that originates on potential pollution sources will be accomplished by using a combination of berms, channels, culverts, and water bars. Erosion and sediment controls include rip-rap channel lining, synthetic channel lining, and settling basins or ponds. Down-gradient structural controls will capture stormwater originating on WRDAs, stockpiles, growth medium stockpiles, and borrow areas and divert it to sediment basins to settle out sediment. Stormwater originating on roads will be captured in roadside diversion channels with integral engineered outlets that allow diversion to basins or ponds. Channels will have rip-rap and/or synthetic lining if necessary to slow the velocity and scouring.
- *Temporary Construction Controls*: Temporary construction structural controls would be implemented for short-term construction activities. For temporary construction controls, a combination of silt fences, straw bales, waddles, and/or temporary diversion channels will be installed. Temporary construction structural controls may be relocated as construction activities progress.

3.2 Non-Structural Control BMPs

Non-structural controls are procedures, management actions, and other policy activities that are employed to reduce the potential for pollutant loading in stormwater outfalls. Appropriate non-structural controls for the mine include:

- Good housekeeping measures;
- Routine inspections;
- Maintenance;
- Training; and
- Reclamation and revegetation.

3.2.1 Good Housekeeping

Good housekeeping measures include, but are not limited to:

- Storage of materials in areas that are not exposed to precipitation and do not drain to stormwater;
- Providing secondary containment for bulk storage tanks and other containers;
- Removal of non-essential products and waste materials from the site; and
- Removal of debris from stormwater drainage areas.

Good housekeeping and preventive maintenance are the most effective BMPs for controlling stormwater pollution from process areas and storage areas. Spills will be cleaned up immediately and contaminated materials removed and disposed of in accordance with applicable regulations. A licensed firm would be responsible for characterizing the spent materials and either recycling or disposing in accordance with state and federal regulations. Used coolant and oil would not be mixed.

Used containers would be disposed of or recycled according to federal, state, and local regulations. Midway would institute a waste management plan that would identify the wastes generated at the site and their appropriate means of disposal.

3.2.2 Routine Inspections

Inspections of disturbed areas and stormwater structural controls such as stormwater diversion and conveyance systems will be conducted to identify erosion and to ensure that structural controls are functioning effectively. Schedules for inspections are outlined in Section 7, Monitoring and Reporting.

<u>Disturbed Areas Inspection</u>

Inspections of disturbed areas will include observing erosion; gullies, pooling of water, collapsed embankments, or other types of erosion will be identified and documented.

<u>Structural Controls Inspection</u>

Structural stormwater controls will be inspected to determine:

- The functional integrity of the structures; and
- The amount of sediment accumulation if present, to plan for removal of sediment.

Breaches or other items requiring repair observed in berms, channels, or secondary containment will be recorded in writing and reported immediately to management. Following inspections, additional erosion controls or maintenance of existing BMPs will be implemented if required by the Midway Stormwater Management team.

Storage Areas Inspection

Storage areas for chemicals, hazardous materials, solid and liquid waste, or other potential sources of stormwater pollution will be inspected to ensure that containment has not been adversely impacted by storm events.

Oil and Petroleum Storage Inspection

Primary containment (tanks, totes, drums, and other containers) and secondary containment structures for oil and petroleum products will be inspected on a regular basis.

Inspection Schedules

Midway will observe stormwater structural controls, if feasible, during storm events to ensure that the integrity of the structures is maintained. In addition, Midway will inspect disturbed areas, control structures, and storage areas exposed to precipitation or stormwater after any storm event that is equal to or greater than a 25-year, 24-hour event.

Annual Inspections

Inspection and evaluation of BMPs and disturbed areas will be conducted annually, preferably following the spring runoff period. Inspections of the BMPs and the disturbed areas may be conducted separately or concurrently. This evaluation will result in the preparation of a written report, as described in Section 7.

3.2.3 Maintenance

Maintenance is performed after inspections to repair structural controls or to supplement or enhance existing BMPs with additional controls, as required. Maintenance can also be conducted as a result of non-routine observance of needed repairs, testing of facility stormwater equipment such as pumps. Examples of maintenance of stormwater controls include (but are not limited to):

- Removal of accumulated sediment from holding ponds or basins;
- Repair of deteriorated channel linings, pond linings, berms, or water bars;
- Routine maintenance of earth-moving equipment, pumps, and vehicles; and
- Repair of equipment.

3.2.4 Training

An employee awareness, orientation, and training program will be conducted annually for mine personnel responsible for implementation of stormwater management practices. The education program will inform personnel of the components and goals of the Project's stormwater management plan. Table 1 identifies four modules that each annual training session addresses.

Table 1: Training Sessions

Module	Training Requirements
Housekeeping and source control measures	• Review routine housekeeping measures and issues; • Review procedures for minimizing pollutant sources
Mine inspection procedures and maintenance of structural BMPs	• Review mine inspection procedures and schedules • Completion of BMP inspection forms • Maintenance of BMPs • Review BMP plan
Annual periodic evaluation	• What to evaluate • Completing the forms
Spill prevention, response, and reporting	• Review mine spill contingency plan and spill response, containment, and cleanup measures • Review spill notification procedures

A form for documenting stormwater management training sessions will be completed and filed with the water pollution control permit records.

In addition to stormwater management training, other forms of training would indirectly benefit the stormwater management program, such as training for staff in proper unloading techniques, emergency procedures training, and training to inform employees of their responsibilities in proper waste disposal procedures (e.g., allowable wastes that can be placed in the landfill, management of used filters, oily rags, fluorescent light bulbs, aerosol cans, and other regulated substances).

4 POTENTIAL SOURCES OF STORMWATER POLLUTION

This provides an assessment of facilities associated with the Project and discusses each facility's potential (if any) as a source of stormwater pollution. Facility-specific stormwater management controls and BMPs that address potential sources of stormwater pollution are discussed as well.

In general, the types of potential stormwater pollution sources that, depending on specific activities, could be present at the Project include:

- Sediment as total suspended solids (TSS);
- Geochemical constituents (GC) (e.g., metals, potentially acid-generating materials, anions);
- Petroleum hydrocarbons; and
- Reagents, process solutions, or other chemicals.

Facilities are discussed in this section; areas where potential sources of stormwater pollution could occur within the Project area are summarized in Table 2 and described in more detail in the following subsections.

Table 2: Summary of Potential Pollution Sources

Source	Potential Pollutants
Pits	TSS
WRDAs	TSS
Process Facilities	TSS, GC, Petroleum hydrocarbons, solvents, reagents
Haul and Secondary Roads and Conveyor Corridors	TSS
Growth Medium and Woody Debris Stockpiles	TSS
Borrow Areas	TSS
Exploration Activities	TSS
Reagent, Fuel, and Explosives Storage	TSS, Petroleum hydrocarbons, solvents, reagents
Buildings	TSS
Waste Management Facilities	TSS, solvents, reagents
Ready Line	TSS
Yards and Inter-facility Disturbance	TSS
Construction Activities	TSS

A facility is considered a potential stormwater pollution source if the location is exposed to precipitation or may come in contact with stormwater and has the potential to generate stormwater pollution types as previously identified. Locations where potential contaminants are contained within buildings or within the enclosed confines of the process circuit are not considered potential stormwater pollution sources.

Facility categories which have been determined to not be sources of stormwater pollution due to their nature, cover, or other fluid management designs are:

- Power supply;
- Potable water and septic systems;
- Fire water supply;

- Light vehicle wash and truck scale;
- Communication facilities;
- Monitoring wells;
- Fencing;
- Water supply facilities; and
- Area to store petroleum contaminated soils.

4.1 Pits

The Project includes the development of six pits including two main pits known as the North Pan Pit and the South Pan Pit, and four satellite pits known as the Black Stallion, South Syncline, Syncline, and North Syncline pits. The satellite pits will be backfilled.

Groundwater is not expected to be encountered by the pits. Dry pits are expected except for normal wetting during precipitation events. If isolated, perched saturated zones are encountered, diversion ditches and sumps will be installed as necessary to maintain safe operating conditions within the pits. Precipitation-related water that could accumulate in the bottom of the pits and/or pit sumps and benches will be temporary given the high net evaporation (51.5 inches) compared to precipitation (11.85 inches).

4.1.1 Stormwater Controls and Best Management Practices

Stormwater will be diverted around the eastern and western flanks of both pits and returned to natural drainages. Stormwater collection trenches will direct stormwater from disturbed areas to sediment basins to minimize transport of sediment. The diversions will be designed to handle flows in excess of the 25-year, 24-hour storm event. The east North Pan Pit stormwater collection pond, located on the east side of the North Pan Pit (shown on Figure 3) will allow for collection and pumping of stormwater from the native watershed east of the North Pan Pit to the native drainage west of the North Pan Pit. The pumps and pipeline will convey non-contact stormwater from the pond to the native drainage west of the North Pan Pit; the pipeline discharge area will be designed to prevent erosion of the native drainage. Additional sediment basins will be located to prevent sediment from leaving the Mine area as shown on Figure 3.

The diversion of non-contact stormwater through constructed ponds and trenches could result in an increased concentration of suspended solids. The construction of sediment basins will help mitigate the amount of suspended solids entering downgradient drainages.

Stormwater which originates in the pit will remain in the pit, collected temporarily in sumps or ditches if needed. As this water will not leave the pit it is not identified as a potential stormwater pollution source.

4.2 Waste Rock Disposal Areas

Waste rock will be placed on either the North WRDA or the South WRDA. Both WRDAs are located along the western perimeters of their respective pits. Results of geochemical analysis indicate that the majority of waste rock samples are considered non-acid generating (NAG) with an overall low potential for metal-leaching.

The small amount of waste rock that is potentially acid generating (PAG) or metal leaching will be blended within the WRDAs in small quantities within the interior of the WRDA. The final cover on the WRDAs will consist of either 10 or 14 inches of plant growth medium, which, in addition to supporting vegetation, will limit infiltration into the WRDA.

During operations, active portions of the WRDAs will lack established vegetation. This condition will potentially decrease absorption of precipitation by the ground surface which could lead to increased run-off volumes and potential erosion. In turn, this could potentially lead to temporary increased concentrations of suspended solids in stormwater runoff that contacts these facilities during this time period.

4.2.1 Stormwater Controls and Best Management Practices

Stormwater run-off will be diverted around the WRDAs and returned to natural drainages. Culverts will be employed where roads cross natural drainages. The diversions will be designed to handle flows exceeding the 25-year, 24-hour storm event as shown in Figure 3. Sediment basins will be located in drainages down gradient of the WRDAs. Sediment basins will be sized for the annual estimated sediment yield from the WRDAs.

The final configurations of both WRDAs have been designed to blend with the surrounding topography with a stable hydrologic configuration to improve surface run-off. The final surface will also prevent ponding of water, promote long-term stability over time, and limit erosion and channel scour.

4.3 Process Facilities

Mined ore will be hauled via trucks to the primary crusher located just outside of the North and South Pan pits. Ore will be directly deposited into the primary crusher or stockpiled adjacent to the crusher. Ore from stockpiles may be fed via loaders into the crusher. Ore will be transported by conveyors from the primary crusher to the secondary crusher. Ore crushed at the secondary crusher will be placed on the heap via conveyors.

Screening at the secondary crushing station will control the crush size. The fines will be agglomerated with cement and lime and sent to the heap leach pad. Before placement on the heap, leach material will be amended with lime for pH control as necessary. Cement for agglomeration, and lime for pH control will be added at the secondary crusher located just east of the heap facilities.

The heap leach facilities will be designed to contain leach material and solution in accordance with NAC 445A.432 and following. Facilities will employ the design principle of 100 percent containment (zero-discharge design) under both normal operating and specific emergency conditions.

Dilute sodium cyanide solution will be applied to the leach material on the pad. Solution will percolate through the leach material to the synthetic liner, flowing via solid-walled pipes in lined ditches to the lined pregnant solution pond. Cyanide will be added to the barren solution, which will be re-circulated back to the heap to continue the leaching process.

Barren solution will be distributed on the leach pad with drip tube emitters. Pregnant solutions will be treated in a conventional adsorption/desorption refining (ADR) plant which includes the following unit processes:

- Carbon-in-Columns
- Acid wash
- Carbon elution
- Electrowinning
- Carbon regeneration
- Carbon handling and sizing
- Reagent mixing and storage
- Refinery

Process facilities have the potential to create stormwater pollution in the form of suspended solids from cleared yard areas, ore stockpiles, and crushing facilities. Although most of the material has been determined to be NAG and have a low potential for leaching metals, some potential for GC contamination may exist.

Fuels and reagents are used on a daily basis in the process system and for processing equipment. Therefore, the potential for petroleum, solvent, and reagent stormwater pollution will exist.

4.3.1 Stormwater Controls and Best Management Practices

Stormwater run-off will be diverted around the heap and returned to natural drainages. The diversions will be designed to handle the 100-year, 24-hour storm event. In addition, culverts and diversion ditches may be placed in and around the process facilities as necessary for further stormwater control. Stormwater runoff from the heap will be channeled to the process ponds. Stormwater collected in the ponds will be handled in accordance with the water pollution control permit, which will allow for utilizing collected stormwater in the process circuit.

At a minimum, the solution ponds will be sized and operated to withstand and fully contain process fluids as well as projected accumulations from a 100-year, 24-hour storm event. Solution that could be toxic to wildlife and domestic animals will be fenced and covered to prevent access as required by the Nevada Department of Wildlife (NDOW) Industrial Artificial Pond Permit.

The liner system for the process ponds will consist of a 12-inch thick (minimum) underliner overlain by an 80-mil geomembrane liner. The LCRS sump design consists of a geotextile-wrapped, gravel filled sump between the primary and secondary liners with an 8-inch diameter riser pipe, perforated within the gravel, for leak detection and removal. The underliner layer within the sump area will consist of 24 inches of soil with a maximum permeability of $1x10^{-7}$ cm/s to provide additional containment of fluids in the sump over the design life of the facility.

Containment within the process building will include tanks, pipes, and vessels; and sealed concrete floor slabs and walls as secondary containment. The concrete floors will be sealed to prevent leakage outside of containment. Secondary containment will accommodate 110 percent of the largest tank or series of tanks located within each

building. Solution contained within the concrete containment will be pumped through a double-walled pipe to a process pond.

4.4 Haul Roads, Secondary Roads, and Conveyor Corridors

Haul roads and secondary roads are situated throughout the project area as shown on Figure 3. Conveyor corridors will be located between the crushing facilities and the process facilities. The roads would be constructed according to MSHA standards which include a berm at least the height of half the wheel height of the largest vehicle utilizing the road. Secondary roads would also be bermed in accordance with MSHA regulations.

Stormwater run-on to haul roads, secondary roads, and conveyor corridors can originate from precipitation and from up-gradient disturbance areas. Scouring and gully erosion can occur on the surface and sides of haul roads during severe storm events. Therefore, haul roads, secondary roads, and conveyor corridors have been identified as potential pollution sources for suspended solids during a storm event or period of runoff.

4.4.1 Stormwater Controls and Best Management Practices

Roads and conveyor corridors would be constructed, graded, and maintained to minimize ponding. Approved dust suppressants will be applied to the roads when required.

Stormwater runoff originating on haul and access roads will be routed into the side channels and diverted at engineered structures to sediment basins. Stormwater channel beds will be reinforced with rip-rap where necessary to reduce velocity and potential for scouring. The determination of where to place rip-rap will occur as part of the channel design and where erosion may have occurred after storm events. Roadside diversion channel banks will be constructed with 1.5:1V slopes on the up-gradient side, and designed to contain the 25-year, 24-hour storm event.

Light vehicles will use the truck wash at the truck shop.

4.5 Growth Medium and Woody Debris Stockpiles

Five growth medium stockpiles will be placed as shown on Figure 3. These piles will contain growth medium which has been salvaged from facility footprints prior to facility construction. Woody debris removed from facility footprints will be windrowed or stockpiled and will contain tree stumps, bushes, and other large natural vegetative remains.

Since the growth medium stockpiles consist of disturbed soil that will lack vegetation during early construction, the stockpiles have been identified as potential pollution sources for suspended solids during a storm event or period of runoff. Woody debris stockpiles may also contain loose soil which could be released during storm events.

4.5.1 Stormwater Controls and Best Management Practices

Stormwater diversions will be constructed up-gradient of each stockpile and berms will be constructed around their perimeters to retain transported sediments from the stockpiles. Growth medium stockpiles will be revegetated as soon as practicable to minimize erosion and non-native or noxious weed infestations.

4.6 Borrow Areas

Borrow sources will be required for construction materials including heap leach pad underliner and overliner, prepared subgrade materials, drainage materials, pipe bedding materials, road surfacing materials, closure materials, and riprap. Construction-related borrow areas will be located as shown on Figure 3. Depth of potential borrows are expected to be between 5 and 15 feet. Borrow areas may be revisited over the mine life.

Borrow areas will generally be designed as free draining. Because borrow areas may involve temporary storage of excavated material near the borrow excavation, and because they will lack vegetation for the time period between initial excavation and reclamation, these areas have been identified as potential pollution sources for suspended solids during a storm event or period of runoff.

4.6.1 Stormwater Controls and Best Management Practices

In general, borrow areas will be graded to prevent erosion from stormwater origination on the borrow area surface. Borrow areas outside of facility footprints that would be dormant will be seeded with an interim seed mix to control dust, erosion, and prevent the encroachment of invasive, non-native species.

4.7 Exploration Activities

Exploration activities will consist of drill road and pad construction, surface sampling, trenching, bulk sampling, and drilling using both RC and core rigs. Exploration activities may also include geotechnical investigations, geophysical surveys, water exploration, and monitor well installation.

Exploration activities that disturb areas exposed to precipitation and/or stormwater flow may be considered a potential source of stormwater pollution related to suspended solids.

4.7.1 Stormwater Controls and Best Management Practices

Best management practices that will be used to minimize erosion and control sediment runoff and may include:

- Surface stabilization measures – dust control, mulching, riprap, temporary gravel construction access, temporary and permanent revegetation/reclamation, and placing growth medium;
- Runoff control and conveyance measures – hardened channels, runoff diversions; and
- Sediment traps and barriers – check dams, grade stabilization structures, sediment detention basins, sediment/silt fence and straw bale barriers, and sediment traps.

Revegetation of disturbed areas will reduce the potential for wind and water erosion. Concurrent reclamation will be maximized to the extent practicable to accelerate revegetation of disturbed areas. Sediment and erosion control measures will be inspected periodically, and repairs performed as needed.

4.8 Reagent, Fuel, and Explosives Storage

Smaller quantities of hydrocarbons and regulated materials will be located at the truck shop, warehouse, and process area. These will be kept indoors in proper storage and

secondary containment systems and are considered stormwater pollution sources. Most reagent tanks will be located inside of the process facilities in secondary containment and are not considered potential stormwater pollution sources. Bulk fuel storage will be outside in double-walled tanks, and therefore are not considered potential stormwater pollution sources.

Explosive agents will be purchased, transported, stored, and used in accordance with the Bureau of Alcohol, Tobacco, and Firearms; Department of Homeland Security provisions; and MSHA regulations. The primary explosive used will be a mixture of ammonium nitrate and fuel oil (ANFO). Ammonium nitrate prill will be stored in a silo in a secure area. Explosive agents, boosters, and blasting caps will be stored within a secured area as shown on Figure 3.

4.8.1 Stormwater Controls and Best Management Practices

Liquid fuels stored outside of buildings will be stored in double-walled tanks. The floor of the reagent areas will be sealed to prevent spills from entering cracks or permeating the concrete and being released to the environment.

Fittings connecting the delivery truck hoses to the unloading systems would be located within the containment areas or spill collection structures to contain minor leaks as well as catastrophic failures of the delivery system. Containers and tanks will be inspected on a scheduled basis, and maintenance will be performed to avoid leakage from container ports or dispensing devices. Spill kits will be located at or near storage areas to contain and absorb spills. Storage areas will be placed away from potential run-on stormwater.

4.9 Buildings

The administrative building and safety/security will be located along the access road. These buildings are not considered to be stormwater pollution sources.

An enclosed truck wash facility will be located adjacent to the truck shop. Wash water will be directed to a settling basin where water and solids will be separated. Water will be treated with an oil-water separator and re-circulated. Solids collected from the settling basin will be tested and handled as petroleum contaminated soil if necessary. As the truck will be enclosed and wash water will be kept in containment, it is not considered to be a stormwater pollution source.

A warehouse will be located near the truck shop and will be used for the storage of supplies and small equipment. The laboratory will be located near the administration building. The laboratory will include separate areas for sample preparation, wet analysis, a metallurgical laboratory, a balance room, and offices. The laboratory will operate seven days per week and will be capable of processing mine and process samples. As the laboratory will be covered and reagents and chemicals kept within secondary containment, it is not considered to be a stormwater pollutant source.

The truck shop will include maintenance bays to support mobile equipment maintenance. Lubricants and antifreeze will be managed and stored in the area as required by MSHA and other state and federal regulations. Oil totes of different size for certain type oils will be used throughout the shop area. Small quantities of solvents, paints, and other materials

will be stored at the truck shop and managed according to state and federal regulations. Materials stored outside of the buildings are discussed under section 4.8.

Parking lots around the buildings will be unvegetated areas which may experience traffic. Loose sediment from the parking lots may become loose during storm events increasing the potential for an increase in suspended solids.

4.9.1 Stormwater Controls and Best Management Practices

Approved dust suppressants will be applied to the parking areas as well as roads when required. Stormwater runoff originating on parking areas will be routed into the side channels and diverted at engineered structures to sediment basins. Stormwater channel beds will be reinforced with rip-rap where necessary to reduce velocity and potential for scouring. The determination of where to place rip-rap will occur as part of the channel design and where erosion may have occurred after storm events. Roadside diversion channel banks will be constructed with 1.5:1V slopes on the up-gradient side, and designed to contain the 25-year, 24-hour storm event.

4.10 Waste Management Facilities

Used lubricants and solvents will be characterized according to the Resource Conservation and Recovery Act (RCRA) requirements and will be stored appropriately. Midway will obtain a Hazardous Waste Identification Number from the Environmental Protection Agency (EPA). The mine is expected to be in the “small quantity generator” category as defined by the EPA. Used solvents and fire assay cupels are the only identified potential hazardous wastes at this time. Midway will institute a waste management plan that will identify the wastes generated at the site and their appropriate means of disposal.

Small quantities of hazardous waste will be stored according to state, federal, and local regulations on a covered and sealed concrete pad with secondary containment berms near the truck shop until removal and disposal at an authorized facility. Used oil and coolant will also be stored at the truck shop in secondary containment. As these waste sources will be covered and in secondary containment, they are not anticipated to be stormwater pollution sources.

Industrial solid waste will be generated during construction and operations. Solid waste generated by the mine and process departments will be collected in dumpsters near the point of generation. Industrial solid waste will be disposed in an onsite Class III industrial landfill in accordance with NAC 444.731 through 444.737. The landfill will be constructed as a trench within an active lift of the South WRDA.

4.10.1 Stormwater Controls and Best Management Practices

The landfill will be covered weekly, and its location surveyed and documented throughout the mine life. Stormwater control measures for this facility are the same as for the WRDAs. A training program will be implemented to inform employees of their responsibilities in proper waste disposal procedures. Waste disposal practices will include:

- Proper storage, disposal and transport requirements for hazardous materials, liquid wastes, and petroleum products;

- Used antifreeze will be collected and stored in a "Used Antifreeze" tank located at the truck shop. Used antifreeze will be sent to a licensed recycling facility via a licensed trucking company;
- Used oil will be collected and stored in a "Used Oil" tank located at the truck shop. Used oil will be tested to determine its status prior to shipping to a recycling facility or other appropriate destination;
- Used aerosol cans will be emptied in satellite accumulation can-puncturing devices located in the truck shop and process building, core shed, and other areas where aerosol cans are used extensively. The can puncturing devices will be equipped with closed-top drums to collect the contents of the punctured can. The contents collected in the drum will be shipped off-site for disposal in accordance with the RCRA. Empty, punctured cans will be disposed in the landfill or recycled as light scrap steel;
- Used haul truck tires will be placed in specific locations within the WRDAs and buried. Only one layer of tires will be placed in each bench. The locations will be surveyed. Alternatively, haul truck tires may be recycled if a suitable recycling facility is available;
- Used fluorescent light bulbs will be collected and sent off site to a recycling facility;
- Used oil filters will be drained prior to being crushed and recycled;
- Shop wipes will be collected in metal receptacles near the point of use and then disposed in accordance with state and federal regulations;
- Used containers that held reagents or petroleum products will be drained, rinsed, and recycled; and
- Used oil will be collected at the used oil tank at the truck shop and transported off site using a licensed used oil transporter.

4.11 Ready Line

Haul trucks and other mobile mine equipment will be temporary staged when not in use at the ready line as shown on Figure 3. The equipment will be parked here during shift changes and when required for light maintenance. As this area will be cleared of vegetation and will experience heavy traffic, the potential for suspended solids to be created during storm events as a stormwater pollutant exists.

4.11.1 Stormwater Controls and Best Management Practices

Roads and conveyor corridors would be constructed, graded, and maintained to minimize ponding. Approved dust suppressants will be applied to the roads when required.

Stormwater runoff originating on haul and access roads will be routed into the side channels and diverted at engineered structures to sediment basins. Stormwater channel beds will be reinforced with rip-rap where necessary to reduce velocity and potential for scouring. The determination of where to place rip-rap will occur as part of the channel design and where erosion may have occurred after storm events. Roadside diversion channel banks will be constructed with 1.5:1V slopes on the up-gradient side, and designed to contain the 25-year, 24-hour storm event.

4.12 Yards and Inter-facility Disturbance

Yards are defined as relatively flat areas that may be used for equipment storage, access, supplies, and buffer areas between facilities. Undisturbed "islands" of vegetation will typically remain between the facilities; however, for permitting and bonding purposes, land within the Mine area not otherwise designated on Figure 3 as another facility is assumed to be disturbed and will be designated as yard.

4.12.1 Stormwater Controls and Best Management Practices

Best management practices will be used to limit erosion and reduce sediment in precipitation runoff from yards and disturbed inter-facility areas. Best management practices that will be used may include:

- Surface stabilization measures – dust control, mulching, riprap, temporary gravel construction access, temporary and permanent revegetation/reclamation, and placing growth medium;
- Runoff control and conveyance measures – hardened channels, runoff diversions; and
- Sediment traps and barriers – check dams, grade stabilization structures, sediment detention basins, sediment/silt fence and straw bale barriers, and sediment traps.

Revegetation of disturbed areas will reduce the potential for wind and water erosion. Following disturbance, areas such as cut-and-fill embankments and growth medium/cover stockpiles will be seeded as soon as practicable and safe. Concurrent reclamation will be maximized to the extent practicable to accelerate revegetation of disturbed areas. Sediment and erosion control measures will be inspected periodically, and repairs performed as needed.

4.13 Construction Activities

Construction of facilities would be performed by contractors during a period of time prior to the full commencement of operations. During this time, pre-stripping would be performed. Construction activities that disturb areas exposed to precipitation and/or stormwater flow may be considered a potential source of stormwater pollution.

4.13.1 Stormwater Controls and Best Management Practices

Best management practices will be used to limit erosion and reduce sediment in precipitation runoff from proposed Project facilities and disturbed areas during construction.

Best management practices will be used during construction to minimize erosion and control sediment runoff and may include:

- Surface stabilization measures – dust control, mulching, riprap, temporary gravel construction access, temporary and permanent revegetation/reclamation, and placing growth medium;
- Runoff control and conveyance measures – hardened channels, runoff diversions; and
- Sediment traps and barriers – check dams, grade stabilization structures, sediment detention basins, sediment/silt fence and straw bale barriers, and sediment traps.

Revegetation of disturbed areas will reduce the potential for wind and water erosion. Following construction activities, areas such as cut-and-fill embankments and growth medium/cover stockpiles will be seeded as soon as practicable and safe. Concurrent reclamation will be maximized to the extent practicable to accelerate revegetation of disturbed areas. Sediment and erosion control measures will be inspected periodically, and repairs performed as needed.

5 RECLAMATION AND REVEGETATION

Reclamation of disturbed areas will be completed in accordance with BLM and NDEP regulations and the Project Plan of Operations and Reclamation Permit Application. The Plan of Operations addresses earthwork and recontouring, revegetation and stabilization, and monitoring operations necessary to satisfactorily reclaim disturbed areas.

Reclaimed surfaces will be seeded to control runoff and reduce erosion. Seedbed preparation and seeding would take place after grading and topsoiling of reclaimed areas. Reclamation seed mixtures and application rates will be based on BLM requirements and on the species' effectiveness in providing erosion protection, the ability to grow within the constraints of the low annual precipitation experienced in the region, its suitability for site aspect, and the elevation and soil type.

6 NON STORMWATER DISCHARGE MANAGEMENT

Sources of non-storm water that could become combined with stormwater discharges (except for flows from fire-fighting activities) are identified in this section. This section identifies the implementation of appropriate management measures for the non-storm water component(s) of the discharge. Sources of non-stormwater discharges which could occur include:

- Occasional flushing of wells or water pipelines for testing;
- Washing of buildings or pavement to maintain housekeeping;
- Irrigation for landscaping; and
- Application of water or dust suppressants to roads.

The BMPs for management of these non-stormwater discharges include:

- *Well and Pipeline Flushing:* The amount of water used to conduct occasional flushing of wells or pipelines is not normally of sufficient volume to cause significant erosion or sediment transport. Flushing activities are completed as quickly as possible, to minimize any potential for overflow.
- *Washing Buildings or Pavement:* The amount of water used to conduct occasional washing of buildings or pavement is not normally of sufficient volume to cause significant erosion or sediment transport. The use of detergents for washing buildings or pavement is prohibited.
- *Dust Suppressants on Roads:* Dust suppressants are applied to unpaved haul roads and access roads, as needed. Application is to road surfaces only. Water from direct precipitation and from water sprayed as routine dust control will come into contact with the suppressants on the roads and may contribute to stormwater pollution.

7 MONITORING AND REPORTING

Stormwater management for the Project will be regulated under the Project's water pollution control permit (WPCP). Currently, there are no requirements to monitor stormwater discharges since there are no waters of the United States identified within or connected to the Project area.

Midway will observe stormwater structural controls if feasible during storm events to ensure that the integrity of the structures is maintained. In addition, Midway will inspect disturbed areas, control structures, and storage areas exposed to precipitation or stormwater after any storm event that is equal to or greater than a 25-year, 24-hour event, to ensure that overtopping and erosion has not occurred and that proper sedimentation control is taking place. Staff conducting the inspections will report their findings to management.

Annual Inspections: Inspection and evaluation of all BMPs and disturbed areas will be conducted annually, preferably following the spring runoff period. Inspections of the BMPs and the disturbed areas may be conducted separately or concurrently. This evaluation will result in the preparation of a written report documenting the following:

- Evaluation of all areas of disturbance and their current status;
- Evaluation of BMPs for their effectiveness in reducing stormwater pollutant loads; and
- Schedule for modifying the BMPs and revisions to the stormwater management plan, if practical reductions of pollutants can be achieved.

Table 3 outlines the general requirements for inspection and monitoring by the Project Stormwater Management Team.

Construction Inspections. During construction activities, Midway will inspect disturbed areas, storage areas, and structural controls associated with construction that are exposed to precipitation at least once every seven calendar days and within 24 hours after the end of a 10-year, 24-hour storm event.

Inspection of primary containment and secondary containment structures for oil and petroleum products is described in the Project Spill Contingency Plan included as an Appendix in the Project Plan of Operations.

Records of all inspections and maintenance shall be maintained as part of this stormwater management plan.

Table 3: Inspection and Monitoring Requirements (for Non-Construction Operations)

Location or Component (exposed to precipitation or stormwater)	Inspection and Monitoring Schedule
Disturbed Areas	• Annually • After 25-year, 24-hour storm event
Storage Areas	• Annually • After 25-year, 24-hour storm event
Structural Stormwater Controls	• Annually • After 25-year, 24-hour storm event • During storm events as practicable

8 CHANGES TO STORMWATER MANAGEMENT

This stormwater management plan identifies protocols for performing periodic inspections and evaluations, which could have one or more of the following outcomes. For any of these outcomes, the plan will require revision:

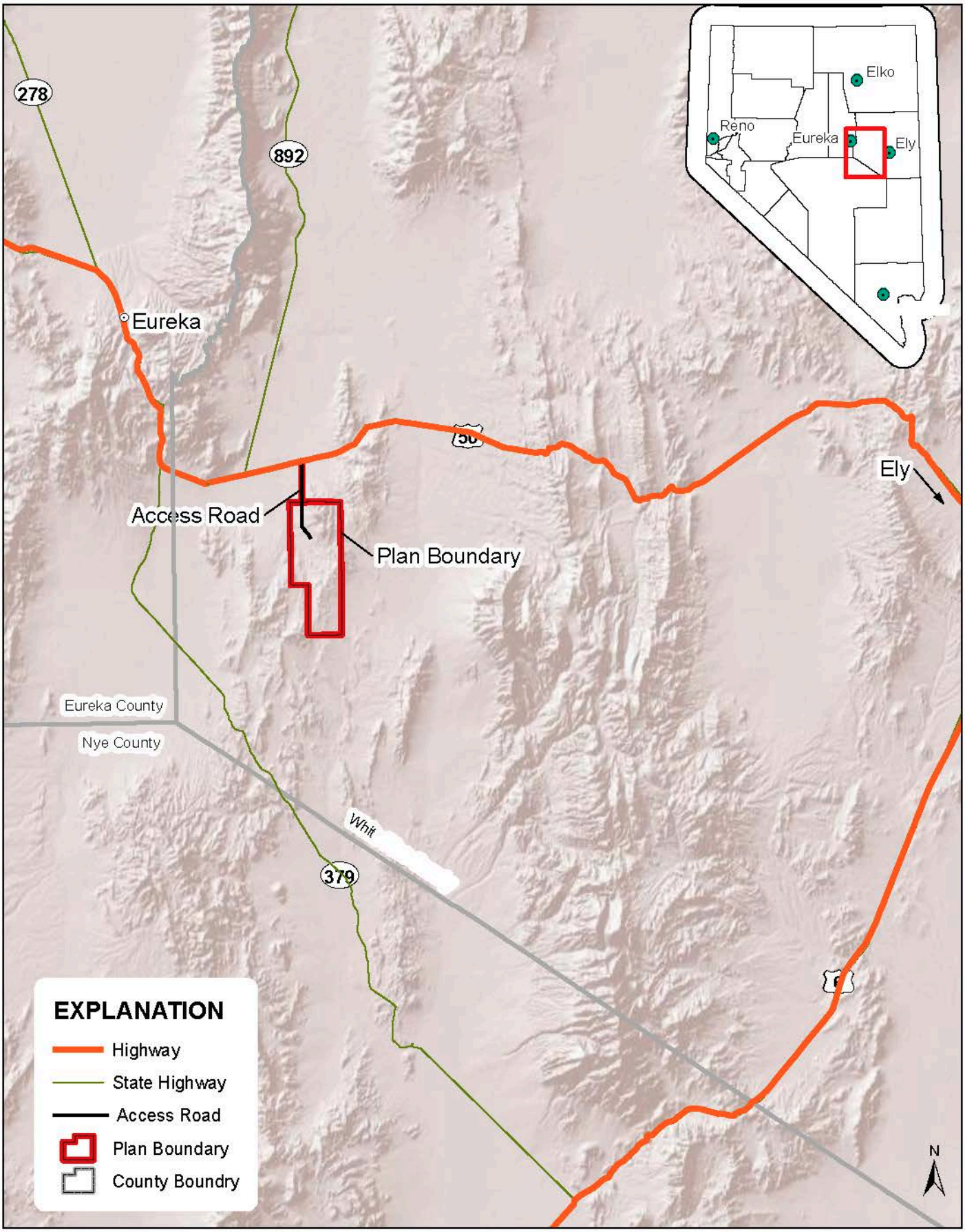
- "Undocumented" potential pollutant sources (not identified in the plan) are identified on the property;
- Potential pollutant sources described in the plan have been removed from the property; or
- A determination is made that additional BMPs are required to effectively control stormwater and reduce the potential for pollutant migration.

9 REFERENCES

Eakin, T.E. 1960. Ground-water appraisal of Newark Valley, White Pine County, Nevada: Nevada Department of Conservation and Natural Resources. (Ground-Water Resources-Reconnaissance Report 1), 33 p.

JBR Environmental Consultants, Inc. (JBR). 2011. Waters of the United States Jurisdictional Determination for the Pan Project White Pine County Nevada. March.

WRCC. 2008. Western Regional Climate Center online data; www.wrcc.dri.edu/htmlfiles/westevap.ginal.html.



srk consulting

NAD 1983 UTM Zone 11N

DESIGN:	ABR	DRAWN:	ABR	REVIEWED:	VS
SCALE:	Not to Scale			DATE:	10/25/2011
FILE:	PoO_160700_080_Fig01_Location_ABR_20110912				

MIDWAY GOLD

PAN PROJECT

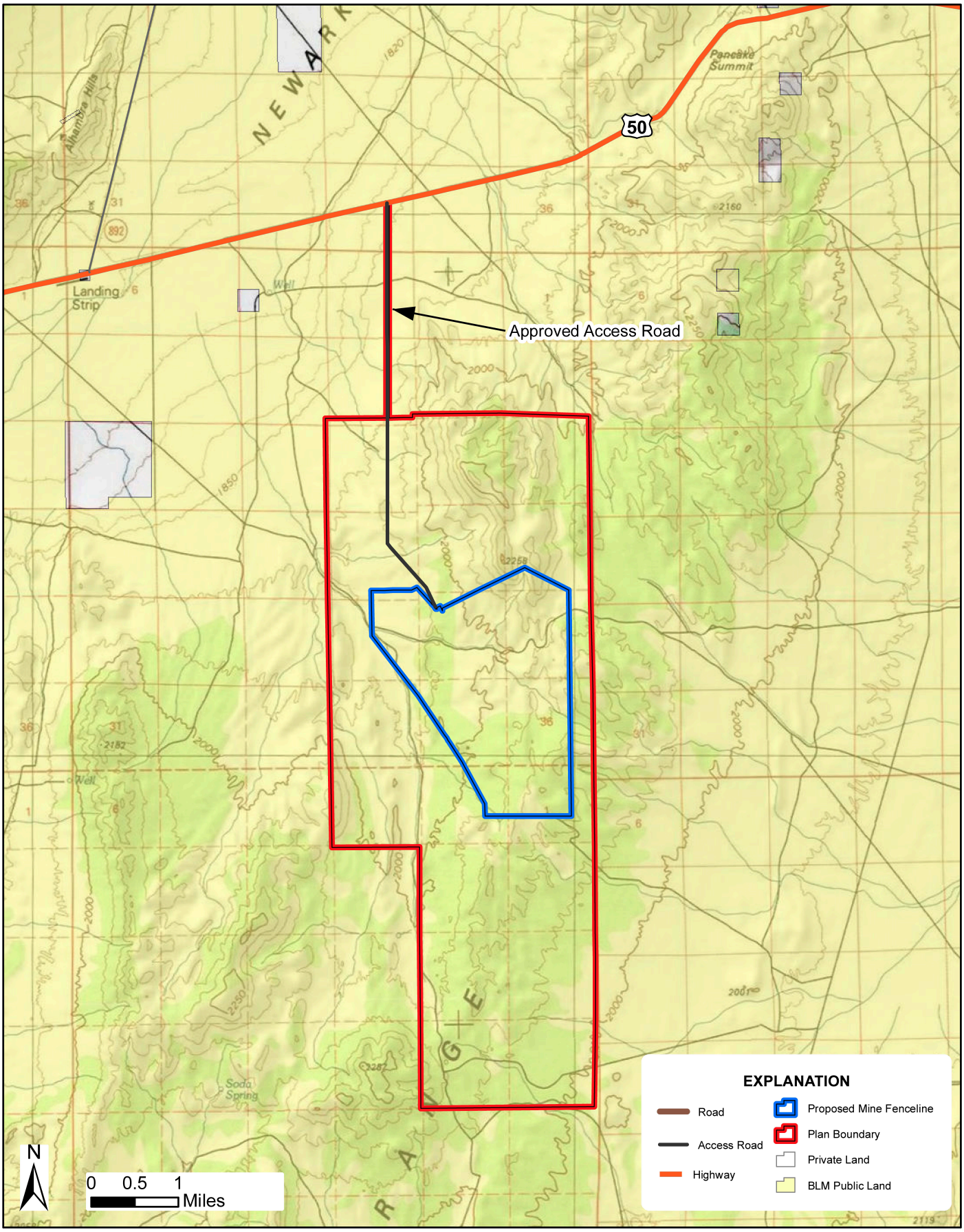
DRAWING TITLE:

LOCATION MAP

Stormwater Management Plan

DRAWING NO.	FIGURE 1	REVISION A
JOB NO.	160700.080	

Path: G:\Sites\Pan_Mine\Midway_Gold_Corp\160700_080_Design_Permitting\Revision_A\PoO_160700_080_Fig01_Location_ABR_20110912.mxd



srk consulting

NAD 1983 UTM Zone 11N

DESIGN: ABR	DRAWN: ABR	REVIEWED: VS	
SCALE: 1 inch = 8,000 feet		DATE: 10/25/2011	
FILE: PoO_160700_080_Fig02_Lnd_Sts_ABR_20110912.mxd			

MIDWAY GOLD

PAN PROJECT

DRAWING TITLE: **LAND STATUS MAP**

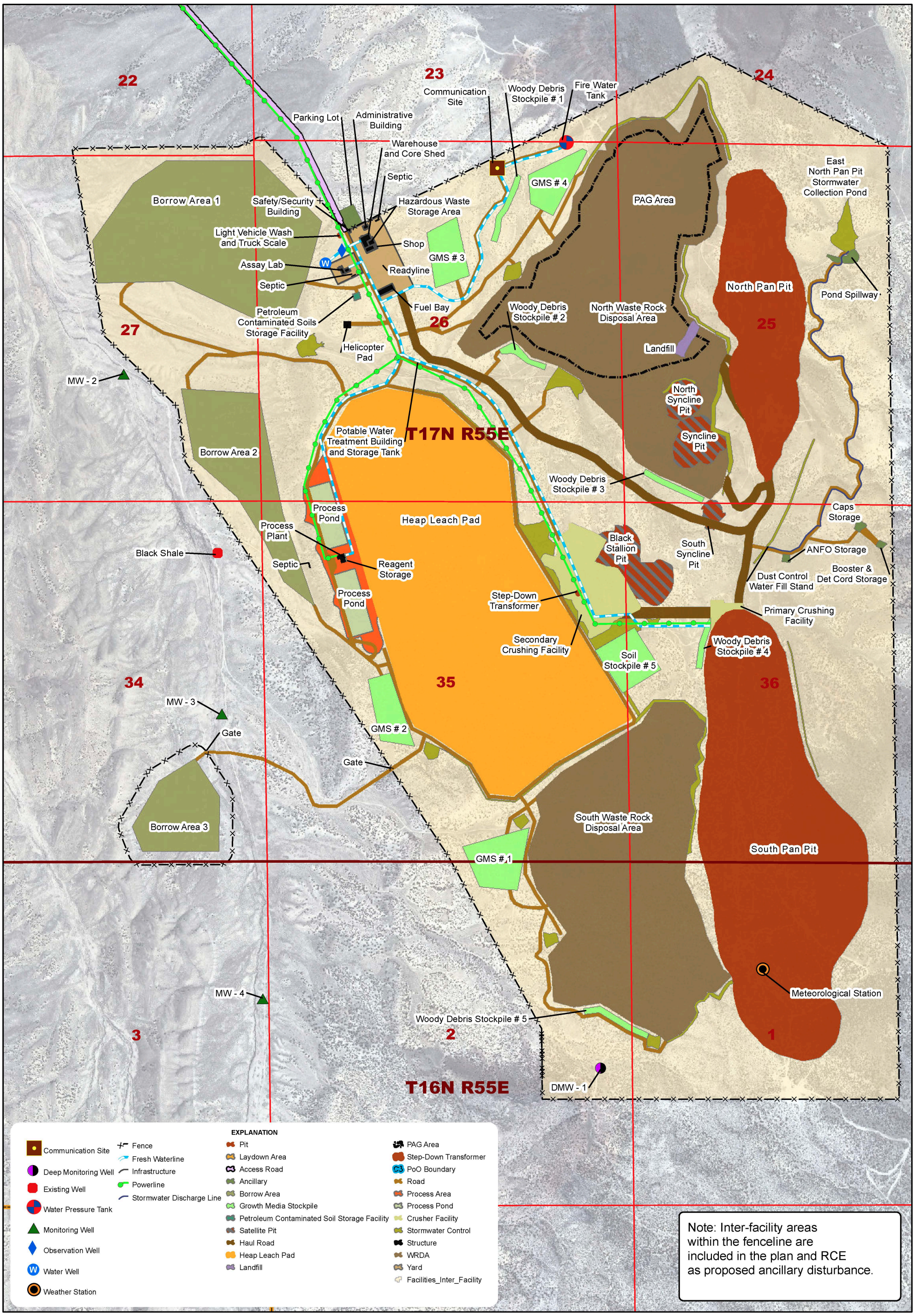
ISSUED FOR: **Stormwater Management Plan**

DRAWING NO. **FIGURE 2**

SRK JOB NO. **160700.080**

REVISION NO. **A**

PATH: G:\Sites\Pan_Mine\Midway_Gold_Corp\160700_080_Design_Permitting\Revision_A\PoO_160700_080_Fig02_Lnd_Sts_ABR_20110912.mxd



N

Feet

0 1,000

srk consulting

NAD 1983 UTM Zone 11N Foot US Feet

DESIGN:	VS	DRAWN:	ABR	REVIEWED:	VS
SCALE:	1 inch = 1,300 feet			DATE:	12/21/2012
FILE:	PoO_160700_080_Fig04_Prop_ABR_20120612.mxd				

MIDWAY GOLD

PAN PROJECT

DRAWING TITLE: APPENDIX I- PROPOSED FACILITIES

ISSUED FOR: Plan Of Operations

DRAWING NO. FIGURE 3

SRK JOB NO. 160700.080

REVISION NO. B

Path: G:\Sites\Pan_Mine\Midway_Gold_Corp\160700_080_Design_Permitting\Revision_B\PoO_160700_080_Fig04_Prop_ABR_20120612.mxd

Appendix 2C
Petroleum Contaminated Soils Plan

Petroleum-Contaminated Soil Management Plan for the Pan Mine Project

Report Prepared by

SRK Consulting (U.S.), Inc.
160700.080
January, 2013

Petroleum-Contaminated Soil Management Plan for the Pan Project

Midway Gold US Inc.

The Point at Inverness, Suite 280
8310 South Valley Highway
Englewood, Colorado 80112

and

705 Avenue K
Ely, Nevada 80301

SRK Consulting (U.S.), Inc.
Suite 520 - 1250 Lamoille Highway
Elko, NV 89801

e-mail: elko@srk.com
website: www.srk.com
Tel: 1.775.753.4151
Fax: 1.775.753.4152

SRK Project Number 160700.080

January 2013

Table of Contents

1 Introduction and Scope of Report 3
1.1 Background 3
1.2 Limitations and Exceptions 4
2 PCS Sources 4
2.1 Summary of PCS Sources 4
2.2 Gasoline PCS 5
2.3 Hazardous Waste Determination 5
3 PCS Management 6
3.1 Management Strategy 6
3.2 PCS Storage Area 6
3.3 Estimated Volume 6
3.4 NAC 445A.227 A – K Requirements 6
3.5 Best Management Practices (BMPs) 7
3.6 Sample Collection and Analytical Protocols 7
3.7 Record Keeping 8
4 Contingency Plan 9
5 Closure and Reclamation 10
6 References 11

List of Tables

Table 2-1: Summary of Fuels and Reagents 5

List of Figures

Figure 1: General Location
Figure 2: Proposed Facilities

1 Introduction and Scope of Report

This document presents a Petroleum-Contaminated Soil Plan for the management of petroleum-contaminated soil incidental to the gold mining operations at the Pan Mine Project. The Pan Mine Project (the Project) is owned by Pan-Nevada Gold Corporation and Midway Gold US Inc. (Midway), both wholly-owned subsidiaries of Midway Gold Corporation. The Project is located in White Pine County, Nevada in the Pancake Range approximately 22 miles southeast of Eureka and 50 miles west of Ely. Figure 1 shows the general Project location.

Although not specifically required by regulation because petroleum-contaminated soil (PCS) will not be treated or disposed at the Pan Mine Project, this Petroleum-Contaminated Soil Plan (Plan) was prepared generally consistent with Nevada Division of Environmental Protection (NDEP) *Guidance for Mine-Site Petroleum-Contaminated Soil (PCS) Management Plans Revision 1, January, 2009.*

Information presented in this Plan is based on Midway's *Water Pollution Control Permit Application for the Pan Project*, dated July 2012, and the *Pan Mine Plan of Operations and Reclamation Permit Application*, submitted in October of 2011.

As discussed in this Plan, Midway will collect PCS in a roll-off bin provided by a licensed contractor prior to sending the material offsite for final disposal in accordance with federal, state, and local regulations. Midway will use a licensed facility to ship PCS off-site, such as Clean Harbors Environmental Services for disposal at their Grassy Mountain Facility, located near Clive, Utah. This PCS Management Plan will address the PCS resulting from accidental spills or leaks of hydrocarbons that include diesel fuel and hydraulic or lubrication oil.

1.1 Background

Midway proposes to develop an open-pit gold mine within the Project Area with two larger pits and four small pits. Ore will be crushed on site and then processed using a central heap leach facility. The projected mining period is 13 years, with associated construction, closure, reclamation, and post-closure monitoring periods, extending the Project life to approximately 28 years. The evapotranspiration cell and associated downgradient monitoring wells will continue to be monitored following construction of the ET cell, bringing the entire Project life to 48 years. The pits, waste rock disposal areas, heap leach facility, roads, and ancillary facilities will result in about 3,140 acres of total disturbance. Upon completion of mining, the operation will be closed and reclaimed. The following activities are proposed:

- Construct, operate, close, and reclaim the following:
  - Two main open pits: the North Pan Pit and the South Pan Pit;
  - Four satellite pits: the Black Stallion, North Syncline, Syncline, and South Syncline pits;
  - Crushing facilities and associated stockpiles;
  - Two waste rock disposal areas;
  - Heap leach pad, conveyors, processing facilities, and ponds;
  - Water supply wells and delivery/storage system;
  - Haul and secondary roads;
  - Additional exploration within the Plan area;

- Ancillary facilities including: power supply; stormwater controls; reagent, fuel, and explosives storage; buildings including administration, laboratory, security, warehouse, coreshed, and parking; potable water supply and septic systems; maintenance shop; ready line; light vehicle wash; communications facilities; helicopter pad; plant growth medium and woody debris stockpiles; Class III-waivered landfill; area for petroleum contaminated soils; monitoring wells; borrow areas; fencing; and yards.

1.2 Limitations and Exceptions

This Plan was prepared for use by Midway at the Pan Mine Project and is intended to be used as a guide for the collection and offsite disposal of PCS that does not meet hazardous waste criteria. Petroleum-contaminated soils determined to be hazardous will be handled, stored, transported, and disposed in accordance with federal, state, and local regulations.

2 PCS Sources

2.1 Summary of PCS Sources

The following were identified as potential sources of PCS at the Pan Mine Project:

- Fuel bay
- Truck wash
- Accidental spills from stationary and mobile equipment.

The primary source of PCS at the Project is anticipated to result from accidental spills. The principal sources of hydrocarbon spills that will be managed under this plan include diesel fuel spills, motor/lube oil spills, and hydraulic fluid. Motor/lube oil and hydraulic fluid spills are associated with equipment failures, such as line ruptures, and thus are relatively infrequent. Midway will transport, store, and use a variety of fuels and reagents. A summary of these materials expected to be present at the site is provided in Table 2-1.

Table 2-1: Summary of Fuels and Reagents

Reagent	Storage	Amount/ Delivery	Anticipated Trucks/ Month	Approximate consumption per day
Off-road Diesel Fuel	2 x 30,000-gallon tanks	6,000 gallons	23	4,400 gallons
Highway Diesel Fuel	2,000-gallon tank	1,800 gallons	0.4	25 gallons
Gasoline	5,000-gallon tank	4,500 gallons	0.8	125 gallons
Automatic Transmission Fluid	1,000-gallon tank	500 gallons	0.9	15 gallons
Engine Oil	1,500-gallon tank	1,000 gallons	0.7	29 gallons
Hydraulic Fluid	1,000-gallon tank	500 gallons	0.5	8 gallons

Reagent	Storage	Amount/ Delivery	Anticipated Trucks/ Month	Approximate consumption per day
Gear Oil	2,000-gallon tank	1,000 gallons	0.7	24 gallons
Used Oil	3,000-gallon tank	2,5000 gallons	0.9	76 gallons

Note: Source – Midway Gold US Inc. "Spill Contingency/Emergency Response Plan"
* Reportable quantities may vary depending on the brand, type, and concentration of the reagents and fuels.

Because the Pan Mine Project is presently in the design and permitting stage, specific products have not yet been identified for use. Once specific products have been identified, Midway will compile Material Safety Data Sheets for each product to further identify constituents that may require special handling.

2.2 Gasoline PCS

Soil contaminated with gasoline will be managed separately from the other PCS sources and as a hazardous waste until the analytical results confirm whether or not the material is characterized as hazardous.

In the event of a spill, liquid gasoline will be recovered by safe and practical means prior to excavating the contaminated soil. Gasoline PCS including the sorbent material will be placed in a roll-off bin labeled to identify the contents and sampled and analyzed according to this Plan. If the analytical results indicate the material is not hazardous, the bin contents will be shipped to the licensed off-site disposal site. If the results show the material to be hazardous, the material will be treated as a hazardous waste and shipped off-site to a licensed facility in accordance with federal, state, and local regulations.

2.3 Hazardous Waste Determination

Petroleum-contaminated soil may be determined to be a characteristic hazardous waste when it exhibits any of the following characteristics as defined in 40 Code of Federal Regulations Section 261: ignitability; corrosivity, reactivity, or toxicity. Midway will determine whether a shipment of PCS meets any of the hazardous waste characteristics during the pre-shipping sampling and route the load to the appropriate final disposal site based on the determination.

3 PCS Management

3.1 Management Strategy

Midway will collect PCS from the identified facilities and accidental spill sites and place the material into a roll-off bin provided by a licensed contractor. The material will be sampled in accordance with federal, state, and local regulations, and contractor requirements to characterize the material prior to shipping offsite.

3.2 PCS Storage Area

The PCS storage area will be located south of the south of the assay lab and west of the fuel bay within the mine fence line, as shown in Figure 2 on public land administered by the U.S. Bureau of Land Management, Egan Field Office. Midway controls the claims associated with the Project. The area will consist of a concrete pad with 6-inch walls to contain the roll-off bin and allow for removal of filled roll-off bins and placement of empty roll-off bins. The PCS storage facility is topographically constrained from naturally draining into nearby surface water bodies or drainages.

The licensed contractor will provide a 20-cubic yard roll-off bin with either a lid or a tarp that seals down to store the PCS on-site. The roll-off bin will be placed on a concrete pad with applicable warning signs to prevent unauthorized placement of materials other than PCS in the bin. Approximately 10 tons of PCS may be placed in the storage facility as the Department of Transportation limits the transportation capacity to 10 tons. The roll-off bin will be picked up by a licensed contractor and transported off-site for disposal at an appropriate facility.

3.3 Estimated Volume

Midway estimates that up to 20 cubic yards of PCS will be generated over a three-year period.

3.4 NAC 445A.227 A – K Requirements

Item 9 of Appendix 2 in the *Guidance for Mine-Site Petroleum-Contaminated Soil (PCS) Management Plans Revision 1, January, 2009* requires an “A-K” assessment pursuant to Nevada Administrative Code 445A.22705.

(a) *Depth to groundwater:* The PCS storage facility will have an elevation of approximately 6,475 feet above mean sea level. The nearest condemnation borehole (CDM-38) has a similar elevation at 6,426 feet above mean sea level and has a static depth to groundwater of 628 feet below ground surface.

(b) *Distance to irrigation or drinking water wells:* No irrigation or drinking wells are located near the PCS storage area.

(c) *Type of soil that may be contaminated:* The Project site is characterized by thin (6 inches to 25 feet deep) colluvial and alluvial deposits overlying Devonian to Permian carbonate and clastic sedimentary rocks and Tertiary basalt flows and tuffs. The annual precipitation for the PCS storage

facility is estimated by using the data from the nearest meteorological station, the Eureka, Nevada (262708) meteorological station.

(d) *Annual precipitation:* Historical records from 1888 to 2012 from the meteorological station indicate the area receives annual precipitation of 11.83 inches. This data can be accessed by visiting the following website: http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?nv2708.

(e) *Type of waste released:* Please see Section 2.1 for the types of substances that may be included in the PCS.

(f) *Extent of contamination* – Not applicable

(g) *Present and potential land uses:* The current and potential land uses includes exploration, mining, grazing, wildlife habitat, and dispersed recreation.

(h) *Preferred routes of migration:* No preferred migration routes have been identified. The depth to groundwater exceeds 600 feet below ground surface.

(i) *The location of structures or impediments*: The location of structures and potential impediments are shown on Figure 2.

(j) *Potential for hazard related to fire, vapor, or an explosion:* The potential for a hazard related to fire, vapor, or an explosion is very low as there will be no free liquid.

(k) *Other Information:* - Not applicable

3.5 Best Management Practices (BMPs)

Protection of groundwater infiltration is provided by placing the roll-off bin on a concrete pad. Protection of surface water is provided by situating the PCS storage facility away from stormwater drainage ditches, as well as the nearest jurisdictional surface water. Warning and informative signage will deter unauthorized placement of non-PCS materials.

Good housekeeping BMPs include routine cleanup of PCS accidentally spilled onto the concrete pad containment, as well as cleanup of vehicle track-out, both of which will be placed back into the PCS storage facility.

3.6 Sample Collection and Analytical Protocols

The environmental staff at the Pan Mine Project will conduct the sampling in accordance with established protocols by taking a composite sample comprised of multiple sub-samples of PCS in the roll-off bin. No less than one composite sample will be collected for each 100 cubic yards of PCS. The samples will be placed in a laboratory-prepared container suitable for the collection of soil samples. The containers will be filled to minimize head space and be sealed with an air tight lid. Sampling tools will be decontaminated between each composite interval. The samples will ship under a chain-of-custody to an outside laboratory. Table 3-1 presents a summary of the screening/monitoring activities.

Table 3-1: Summary of Screening and Monitoring Activities

Identification	Parameter	Frequency
PCS screening analysis	Generator knowledge	Prior to removal
PCS Hazardous Waste Determination (Each PCS source)	Hazardous waste determination	When required[1]
PCS Management each roll-off bin by PCS source type	PCS volume added, volume removed, (cubic yards), destination	Quarterly

[1] A hazardous waste determination is required: a) Initially, for each PCS source prior to management under the Plan; b) When a PCS waste stream is suspected to have changed character since the last determination; and c) When a hazardous constituent is detected during screening analyses at a concentration suggestive of hazardous waste. Determinations will be performed pursuant to 40 CFR 262.11 using operator knowledge and/or applicable analytical testing methods described in EPA publication SW-846. Operator knowledge must be adequately described and sufficient to justify the determination.

3.7 Record Keeping

Midway will maintain a record of the hazardous waste determination(s) as applicable. The volume of PCS added to the roll-off bins, the volume transported off-site, and shipping manifests will be recorded quarterly and kept for a minimum of 7 years.

4 Contingency Plan

As the Project does not have an on-site disposal area, a licensed contractor will transport the PCS roll-off bin to an approved disposal facility.

5 Closure and Reclamation

Midway's management strategy is to send PCS for off-site disposal using a licensed contractor. As such, no PCS will remain on-site that will require special closure plans. The concrete pad will be closed in a manner similar to the other concrete pads and foundations that will be constructed at the Project and as described in Section 3.13 of the *Pan Mine Plan of Operations and Reclamation Permit Application*, dated October 2011. The pad will either be left intact or broken. If left intact, the concrete will be covered with 4.0 feet of native fill and at least 0.5 foot of suitable plant growth media. If broken up, the debris will be placed in the North WRDA landfill; and/or, covered in-place with 3 feet of suitable plant growth media or backfilled against cut banks and highwalls throughout the disturbed area. The final plan for permanent closure will be prepared at least 2 years prior to the projected end of operations. Closure of the PCS concrete pad will be addressed in more detail at that time.

6 References

Midway Gold US Inc. *Pan Mine Plan of Operations and Reclamation Permit Application*. October 2011.

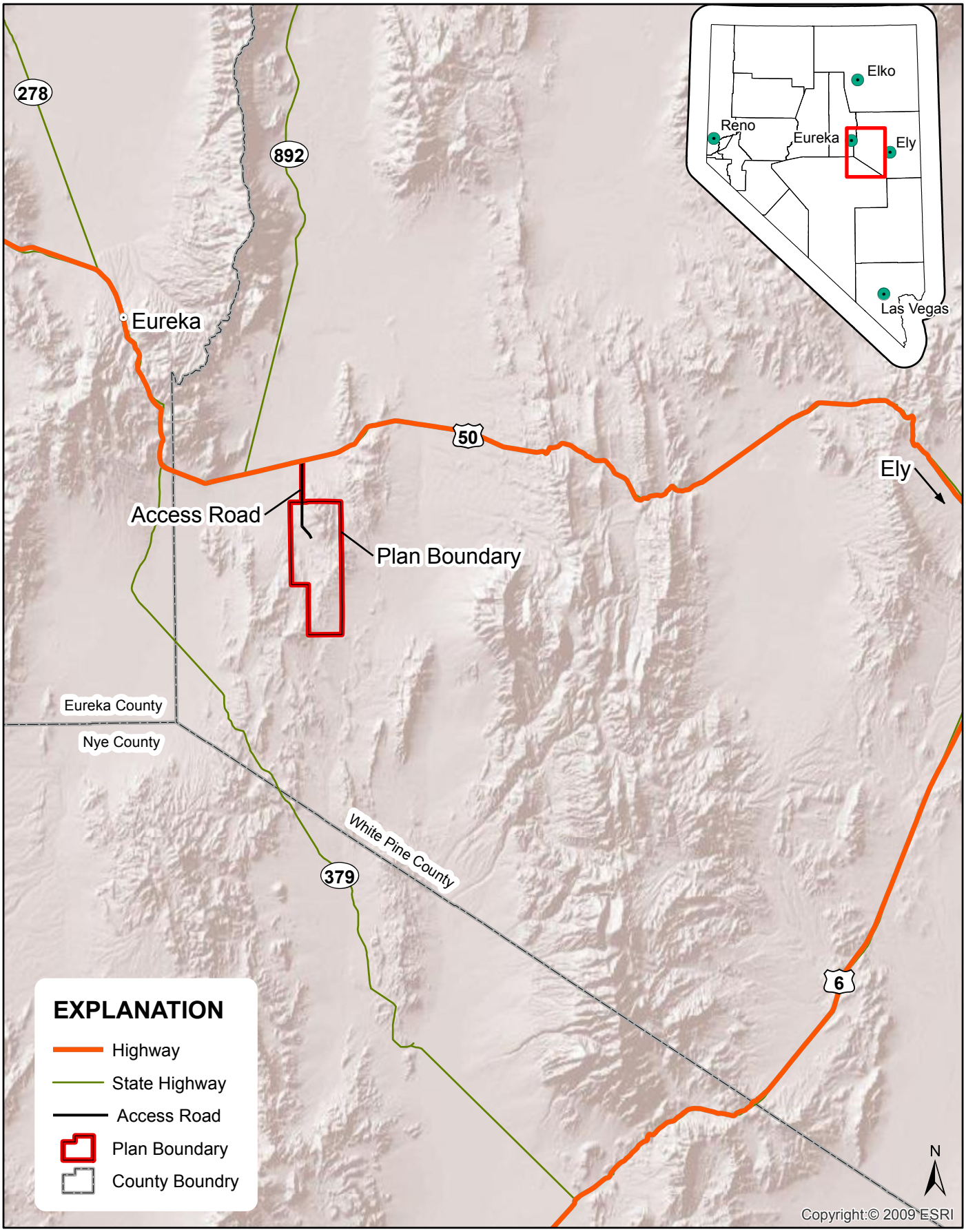
Midway Gold US Inc. *Pan Project Spill Contingency/Emergency Response Plan.* October 2011.

Midway Gold US Inc. *Water Pollution Control Permit Application for the Pan Project, White Pine County, Nevada*. Volume 2: *Assessment of Area Review*. July 2012.

Midway Gold US Inc. *Water Pollution Control Permit Application for the Pan Project, White Pine County, Nevada*. Volume 3: *Meteorological Report*. July 2012.

Western Regional Climate Center. *Period of Record Monthly Climate Summary*. Date accessed: 25 October 2012.

Figures



srk consulting

NAD 1983 UTM Zone 11N

DESIGN: ABR	DRAWN: ABR	REVIEWED: VS	
SCALE: Not to Scale		DATE: 10/26/2012	
FILE: PoO_160700_080_Fig01_Location_ABR_20110912			

MIDWAY GOLD

PAN PROJECT

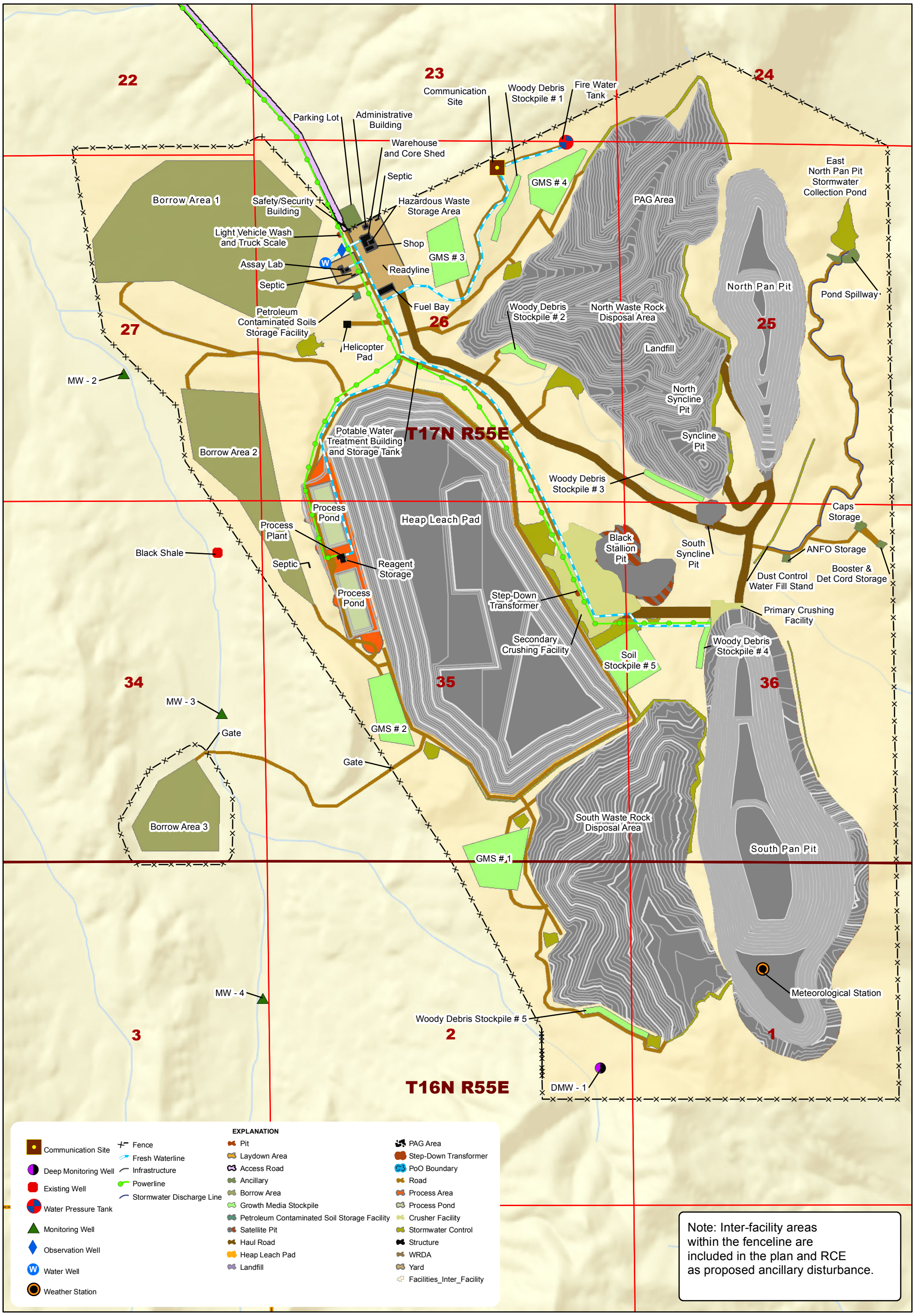
DRAWING TITLE:

GENERAL LOCATION

PLAN OF OPERATIONS

DRAWING NO.	FIGURE 1	REVISION A
JOB NO.	160700.080	

Path: G:\Sites\Pan_Mine\Midway_Gold_Corp\160700_080_Design_Permitting\Revision_A\PoO_160700_080_Fig01_Location_ABR_20110912.mxd



N

Feet

0 1,000

srk consulting

NAD 1983 UTM Zone 11N Foot US Feet

DESIGN: VS	DRAWN: ABR	REVIEWED: VS	
SCALE: 1 inch = 1,300 feet		DATE: 1/2/2013	
FILE: PCS_160700_080_Fig02_Pcs_ABR_20130201.mxd			

MIDWAY GOLD

PAN PROJECT

DRAWING TITLE: PROPOSED FACILITIES

ISSUED FOR: PCS MANAGEMENT PLAN

DRAWING NO. FIGURE 2

SRK JOB NO. 160700.080

REVISION NO. A

Path: G:\Sites\Pan_Mine\Midway_Gold_Corp\160700_080_Design_Permitting\Revision_B\PCS_160700_080_Fig02_Pcs_ABR_20130201.mxd

Appendix 2D
Groundwater Monitoring Plan

Midway Gold US Inc.
Groundwater Monitoring Plan

Pan Project
Nevada

Prepared for:

Midway Gold US Inc.
8310 South Valley Highway, Suite 280
Englewood, Colorado 80112

And

705 Avenue K
Ely, Nevada 89301

Prepared by:

Interralogic, Inc.
4715 Innovation Dr., Suite 110
Fort Collins, CO 80525
(970) 225-8222

Project No: 100013

January 2013

TABLE OF CONTENTS

1 INTRODUCTION 4

1.1 BACKGROUND 4

1.1.1 CLIMATE 7

1.1.2 PHYSICAL SETTING 7

1.1.3 GEOLOGY 7

1.1.4 STRUCTURAL GEOLOGY 8

1.1.5 REGIONAL HYDROGEOLOGY 8

1.1.6 SITE-SCALE HYDROGEOLOGY 9

1.1.6.1 DEEP BEDROCK AQUIFER 10

1.1.6.2 ALLUVIAL AQUIFER 15

2 GROUNDWATER MONITORING 17

2.1 WATER LEVEL MEASUREMENT AND PURGING 18

2.2 SAMPLE COLLECTION AND ANALYSIS 18

2.3 REVIEW OF LABORATORY RESULTS 19

3 SCHEDULE 19

4 REFERENCES 22

LIST OF TABLES

TABLE 1 - COMPLETION SUMMARY FOR DEEP CARBONATE WELLS

TABLE 2 - COMPLETION SUMMARY FOR SHALLOW ALLUVIAL WELLS

TABLE 3 - PROPOSED BASELINE GROUNDWATER MONITORING SUITE

TABLE 4 - PROPOSED SCHEDULE FOR MONITORING PLAN

LIST OF FIGURES

FIGURE 1 - SITE LOCATION

FIGURE 2 - MINE FACILITIES

FIGURE 3 - CONCEPTUAL CROSS SECTION OF MINE AREA

FIGURE 4 - DEEP BEDROCK AQUIFER

FIGURE 5 - EXISTING WELLS IN ALLUVIAL AQUIFER

APPENDIX

APPENDIX A – WELL COMPLETION DETAILS

1 INTRODUCTION

This Groundwater Monitoring Plan has been developed by Interralogic, Inc. for Midway Gold US Inc's (MG) proposed Pan Project, located in White Pine County, Nevada (Figure 1). The Pan Project currently includes the mining of two open pits and four satellite pits for a mine life of 13 years. Ores will be crushed and heap leached, with gold recovery using a carbon-in-columns (CIC) process.

The objectives of this Monitoring Plan are to establish a groundwater monitoring program that is compliant with Nevada regulations, meets guidelines for implementation of Nevada Bureau of Land Management's (BLM's) Water Resource Data and Analysis Policy, and provides additional hydrogeologic information to support the project's Environmental Impact Statement (EIS). The plan is based on the current understanding of the area hydrogeology as described in the Baseline Hydrogeology Report (Interralogic, 2012).

1.1 BACKGROUND

The facilities planned for the proposed Pan Project are shown in Figure 2. The new facilities in the Pan Project area include:

- North Pan Pit
- South Pan Pit
- Satellite Pits (4)
- Leach pad and process ponds (2)
- Waste rock dumps (2)
- Growth media stockpiles
- Mine office and related facilities
- Miscellaneous facilities including roads, power lines, transformers, substations, pipelines, and stormwater management structures.

The Pan Project is a "greenfield" site and therefore there are limited historical data available. Geology and some limited hydrogeology data are available from pre-feasibility and exploration activities plus information developed from hydrogeology field activities conducted in mid-2012 (Interralogic, 2012). The existing regional and site data are summarized in the following sections.

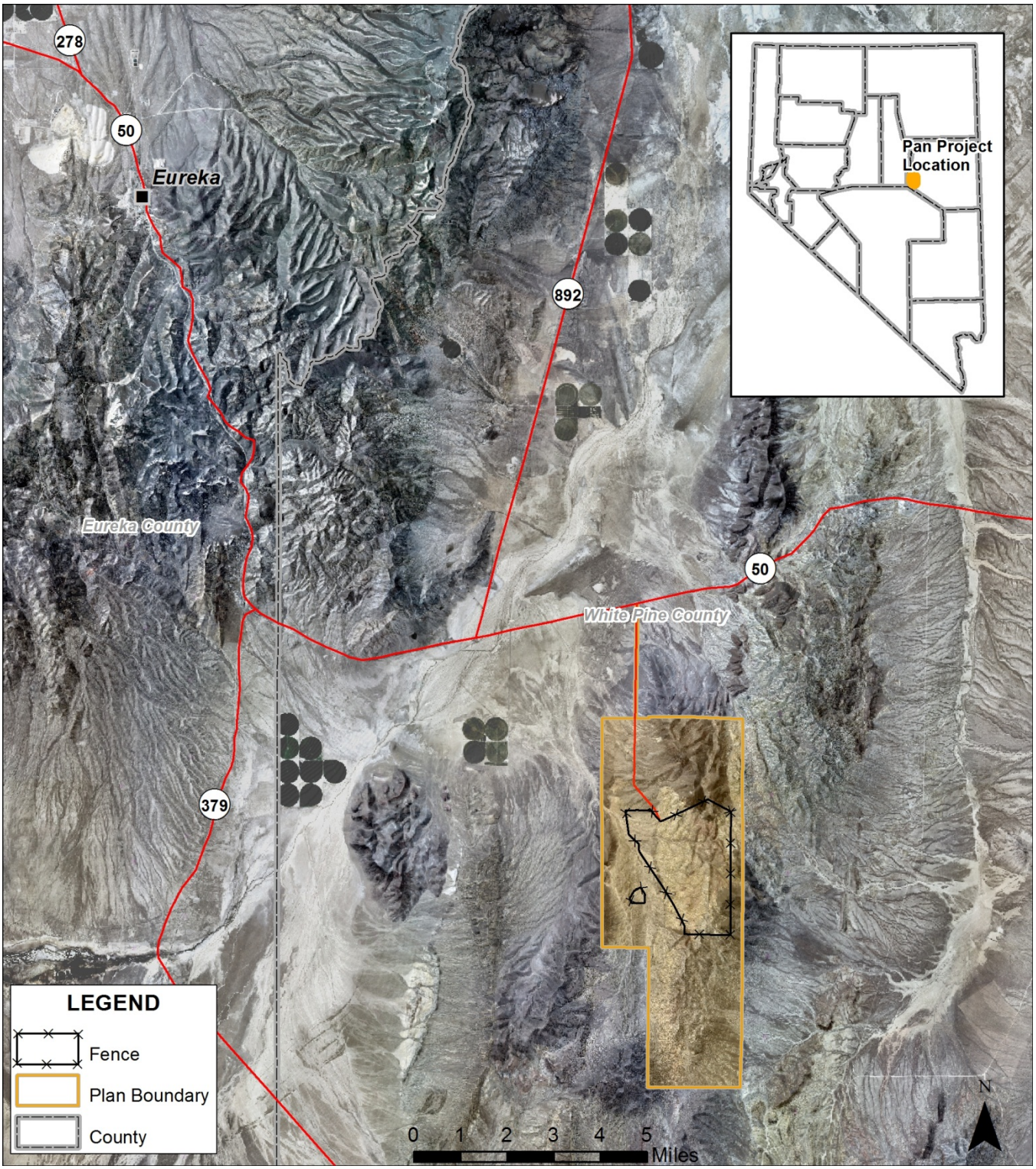


Figure 1 - Site Location

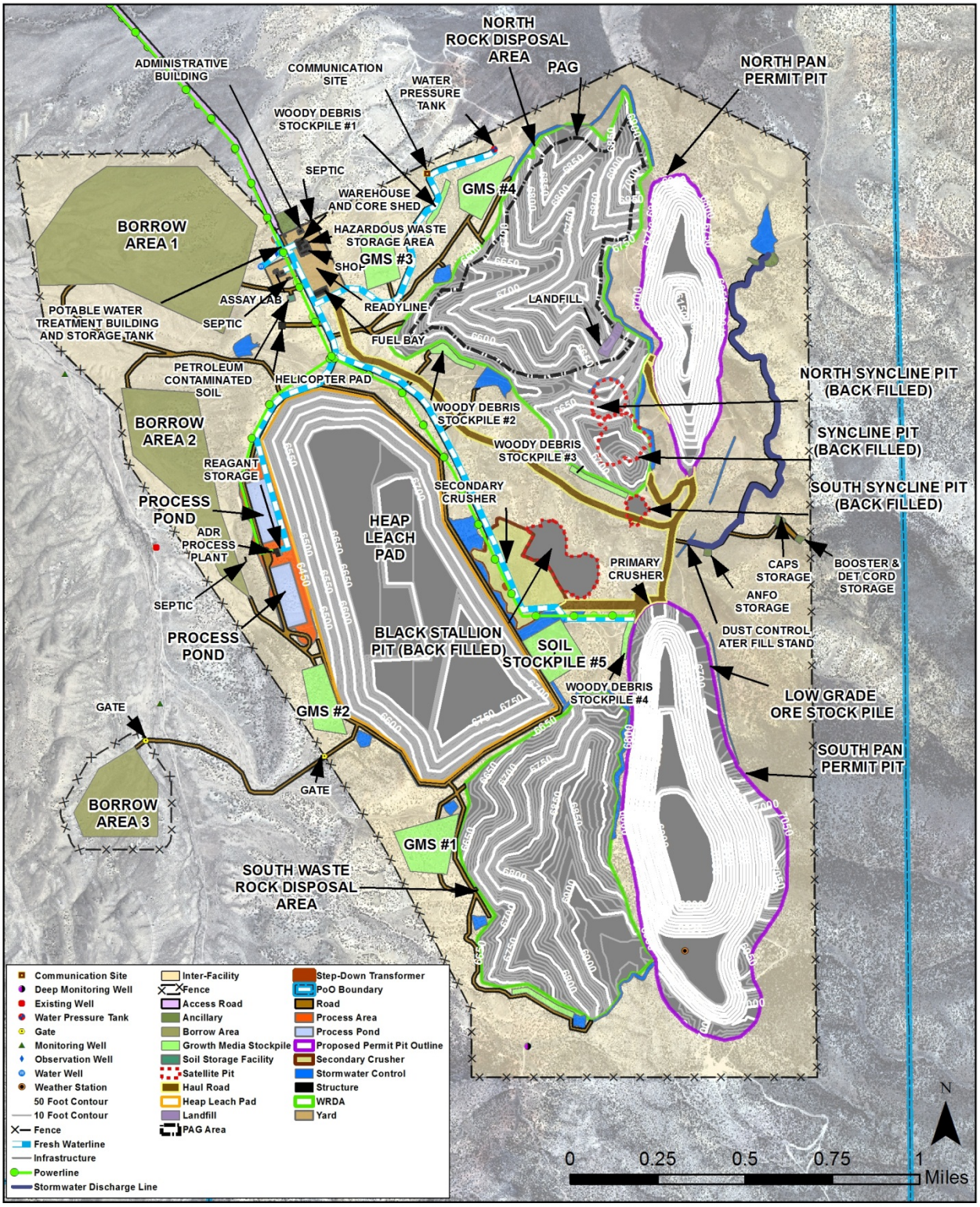


Figure 2 - Mine Facilities

1.1.1 CLIMATE

The climate in the area is typical for the high desert of central Nevada and the Basin and Range province. Climate data from Eureka, Nevada averages 11.85 inches of precipitation per year, with average temperatures ranging from 17 degrees F in the winter to 86.4 degrees F in the summer. Daytime temperatures exceeding 90 degrees F during July and August are common (Western Regional Climate Center, 2008). Average annual pan evaporation at the Ruby Lake Station (about 60 miles north of the Pan site and at elevation 6010 feet amsl) is 51.5 inches (www.wrcc.dri.edu/htmlfiles/westevap.final.html).

1.1.2 PHYSICAL SETTING

The Pan property is located within the rolling hills associated with the Pancake Range of east-central Nevada. The terrain is gentle to moderate throughout most of the project area, with no major stream drainages. Elevation at the property ranges from 6,400 to 7,500 feet above sea level. The local vegetation includes areas of heavy/dense Juniper and Pinyon pines, mixed with open areas of sagebrush and grasses. This vegetation is typical of northern Nevada. No known springs are present on the property.

1.1.3 GEOLOGY

The Pan property is located in the core of the Pancake Range of east-central Nevada. The Pancake Range is within the Basin and Range province, which contains a series of north-south trending mountain ranges separated by deep alluvial valleys. The Pancake Range is approximately 85 miles long and 8 to 10 miles wide, and on the west is bordered by the Newark Valley. The rocks exposed in the range are Devonian to Permian carbonate and clastic sedimentary rocks. These have been locally intruded by a Cretaceous aged quartz monzonite intrusives. These intrusives appear to be age related to the Mount Hamilton stock, which lies in the White Pine Range to the east. The Mount Hamilton area, which contains the Seligman and Monte Cristo stocks, and other similar aged monzonite to quartz monzonite intrusive, may have provided the heat source for the mineral deposits. These formations are overlain by Tertiary volcanics (basalt flows and tuffs) in several locations (Gustavson, 2010).

A summary of lithologic descriptions for the site and vicinity are summarized in Interralogic (2012) and in more detail in Gustavson (2010) and Smith (1976).

1.1.4 STRUCTURAL GEOLOGY

The Pan property is dominated by the north-south trending Pan Fault, which appears to be a normal fault, with some right lateral offset component. Based on drill intercepts and interpretation, the fault dips between 80-85 degrees east, with at least 3,000 feet of normal offset. True offset is unknown due to a lack of deep drilling on the east side of the fault to defined marker horizons exposed on the west side.

On the west side of the fault, Devonian to Mississippian aged rocks dip gently west (10-30 degrees), with moderate folding associated with the Pan and other cross-cutting faults. On the east side of the fault, Devonian to Permian aged rocks dip steeply east (65-70 degrees) along the Pan Fault, flatten and roll back along a northwest trending syncline along the east margin of the property.

The Pan Fault can be tracked north at the surface until it is covered by Tertiary Volcanics at the northern drilled limit of mineralization. To the south, the Pan Fault appears to horsetail into a series of smaller, barite filled structures. The extent of offset is unknown because the fault places Devils Gate against Devils Gate in this area. A parallel series of faults extend west of the Pan Fault, including the Red Hill Fault and Wash Fault.

Several northwest and northeast trending structures have been mapped on the property. These appear to offset mineralization and are terminated against the Pan Fault. Normal offset of 50-500 feet is noted, especially in the Joana Limestone. These faults do not appear to propagate across the Pan Fault, but appear to have younger reactivation associated with offset of mineralization. One east-west trending structure in the south-central portion of the property has been mapped. This structure has approximately 300 feet of offset, and is associated with an intrusive sill. Low angle thrusting that has increased the true thickness of the Pilot Shale is present along the Pan Fault and west of the fault. Age of faulting is unknown at this time.

1.1.5 REGIONAL HYDROGEOLOGY

The Pan Project overlies the Great Basin Carbonate and Alluvial Aquifer System (shortened here to CAAS) (Heilweil and Brooks, 2011). The CAAS covers most of eastern Nevada, and adjacent western Utah. According to a U.S. Geological Survey (USGS) study of the CAAS, most groundwater in the area flows through a patchwork of carbonate and basin fill (including

volcanic deposits) aquifers separated in places by impermeable geologic units and structures. Groundwater in the CAAS flows primarily towards regional discharge areas. In the Project area the primary aquifers present are the lower Paleozoic carbonate and the Cenozoic basin fill.

In the Newark Valley near the Pan Project, the carbonate aquifer groundwater levels are relatively flat and at elevations between 5,800 and 6,300 feet; the area could be described as a groundwater saddle with groundwater flowing toward discharge areas to the north and south (Interralogic, 2012). Analysis of both groundwater budgets and potentiometric surfaces of the CAAS suggest that water recharging in the southern part of the Newark Valley flows south to discharge in the Railroad Valley (Heilweil and Brooks, 2011).

Groundwater flow in the Newark basin-fill aquifer is generally from recharge areas along the margins of the valley towards the center of the valley (Welch, et al., 2007). In Nevada, recharge to the basin fill generally occurs either as infiltration or as subsurface flow from the bedrock mountain ranges. In Newark Valley near the Pan Project area a northward component to groundwater flow along the axis of the valley is present with flow toward discharge areas near the Newark Lake (Heilweil and Brooks, 2011).

Aquifer parameters vary considerably due to the karst conditions observed locally, including a range of eight orders of magnitude for hydraulic conductivity and storage ranging from 0.01 to 0.4 (Heilweil and Brooks, 2011).

Groundwater users make up a large part of the groundwater discharge budget of the basin fill aquifers in many areas of Nevada (Heilweil and Brooks, 2011). Water level data were obtained from the USGS National Water Information System (NWIS) for wells in the Newark and Little Smoky valleys (NWIS, 2012). Data from historical wells in the Newark Valley near the Project area indicate average groundwater levels in the basin fill range from 35 to 128 feet below ground surface (bgs) (5,884 to 5,922 feet amsl).

1.1.6 SITE-SCALE HYDROGEOLOGY

Site-scale hydrogeologic information has been obtained from surface mapping, on-site boreholes drilled for exploration purposes, and wells installed as part of the hydrogeologic characterization field program (Interralogic, 2012). Site-scale hydrogeologic information has

been evaluated, along with regional studies, to develop a conceptual model of groundwater flow at and adjacent to the Project site. Based on the existing data, which are summarized in the sections below, groundwater at the Project site occurs in a deep carbonate aquifer and, to a very limited extent, in a shallow, discontinuous alluvial aquifer along the normally-dry stream channel west of the proposed mine area. Figure 3 presents a conceptual hydrogeologic cross section of the proposed mine area. As shown in the figure, the shallow alluvial groundwater west of the mine area occurs discontinuously at elevations that are approximately 500 feet higher than the carbonate aquifer. The deep carbonate aquifer is approximately 900 feet below the ground surface and locally has hydraulic head 250 feet greater than the top of the aquifer. Groundwater levels in the Newark Valley basin fill are roughly 100 feet higher than the carbonate aquifer indicating a hydraulic gradient from the valley toward the Pan site.

1.1.6.1 DEEP BEDROCK AQUIFER

A deep, confined bedrock aquifer in the Devonian Devil's Gate Limestone is present at the Project site. Site specific information on the deep carbonate aquifer was generated through the exploration drilling program over the last few years and the hydrogeologic characterization program conducted in 2012.

The exploration/condemnation program included advancement of 10 deep boreholes where hydrogeologic information was collected. Information collected included lithology, airlift flow rates and recovery, first water encountered and water level data. This information confirmed the presence of a deep, confined carbonate aquifer beneath the Project site. Three dry boreholes located along the high elevation ridgeline were drilled to over 1,000 feet bgs without encountering water. In the remaining wet boreholes, static water levels were generally higher than the initial elevation where water was encountered in the borehole indicating confined conditions. Boreholes encountered primarily oxidized lithologic materials over the entire depths, suggesting long-term unsaturated conditions over the borehole depth. 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.

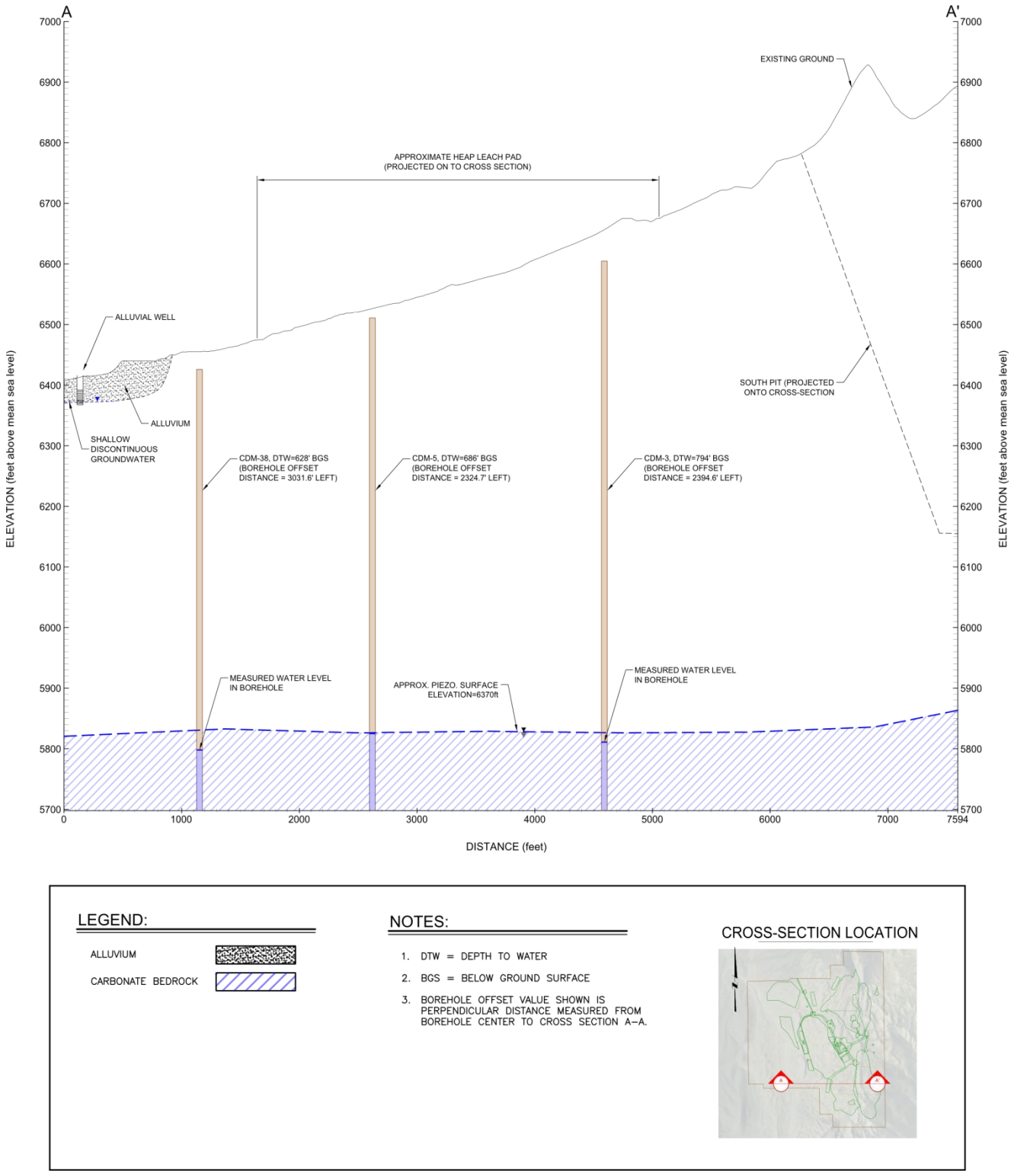


Figure 3 - Conceptual Cross Section of Mine Area

A field program was initiated by Interralogic in April 2012 with the goals of characterizing hydrogeology at the Pan Project site as well as establishing a groundwater monitoring network and developing a water supply from the deep carbonate aquifer. Activities included:

- Installation of a deep monitoring well upgradient of the site
- Installation of a water supply well and a nearby piezometer
- Collection of hydrogeologic information during drilling
- Measurement of static groundwater levels
- Testing hydraulic properties of the aquifers
- Collection of groundwater samples for laboratory analysis

Three deep bedrock wells were drilled and installed from April 23 to July 6, 2012 to provide baseline groundwater information for the carbonate aquifer as well as a potential water supply for the mine. Summary information for the wells is presented in Table 1 and well construction logs provided in Appendix A. Static groundwater elevations in these wells range from 5,824 to 5,794 feet AMSL (Figure 4). The groundwater levels in the wells are above the top of the aquifer indicating the aquifer is at least locally confined where intercepted by drillholes. The difference between water levels in two nearby wells (OBS-1 and PW-1) suggests that lithologic or structural barriers may exist in the aquifer. Experience during drilling and aquifer testing suggests the aquifer generally has high permeability (Interralogic, 2012).

The boreholes were drilled with using air rotary method with foam to depths ranging from 1,035 to 1,185 feet bgs. Bedrock encountered consisted of black shale, minor siltstone and massive and sometimes voided carbonate with occasional mineral alteration zones. Well completion details are presented in diagrams in the baseline report (Interralogic, 2012).

Location	Easting*	Northing*	Ground Surface Elevation	Screen Depth**	Screened Geology	Elevation Water Encountered	Potentio metric Elevation	Hydraulic Conductivity (ft/day)
DMW-1	6,550,278	46,813,694	6,713.1	1035 - 975	Limestone	5,726	5,824	21
OBS-1	6,537,824	46,853,022	6,442.9	1100 - 950	Limestone	5,483	5,794	N/A
PW-1	6,537,040	46,852,389	6,431.9	1152 - 851	Limestone	5,587	5,819	49

*NAD 83 UTM Meters

**All depths in feet from ground surface; elevation in feet amsl.

Table 1 - Completion Summary for Deep Carbonate Wells

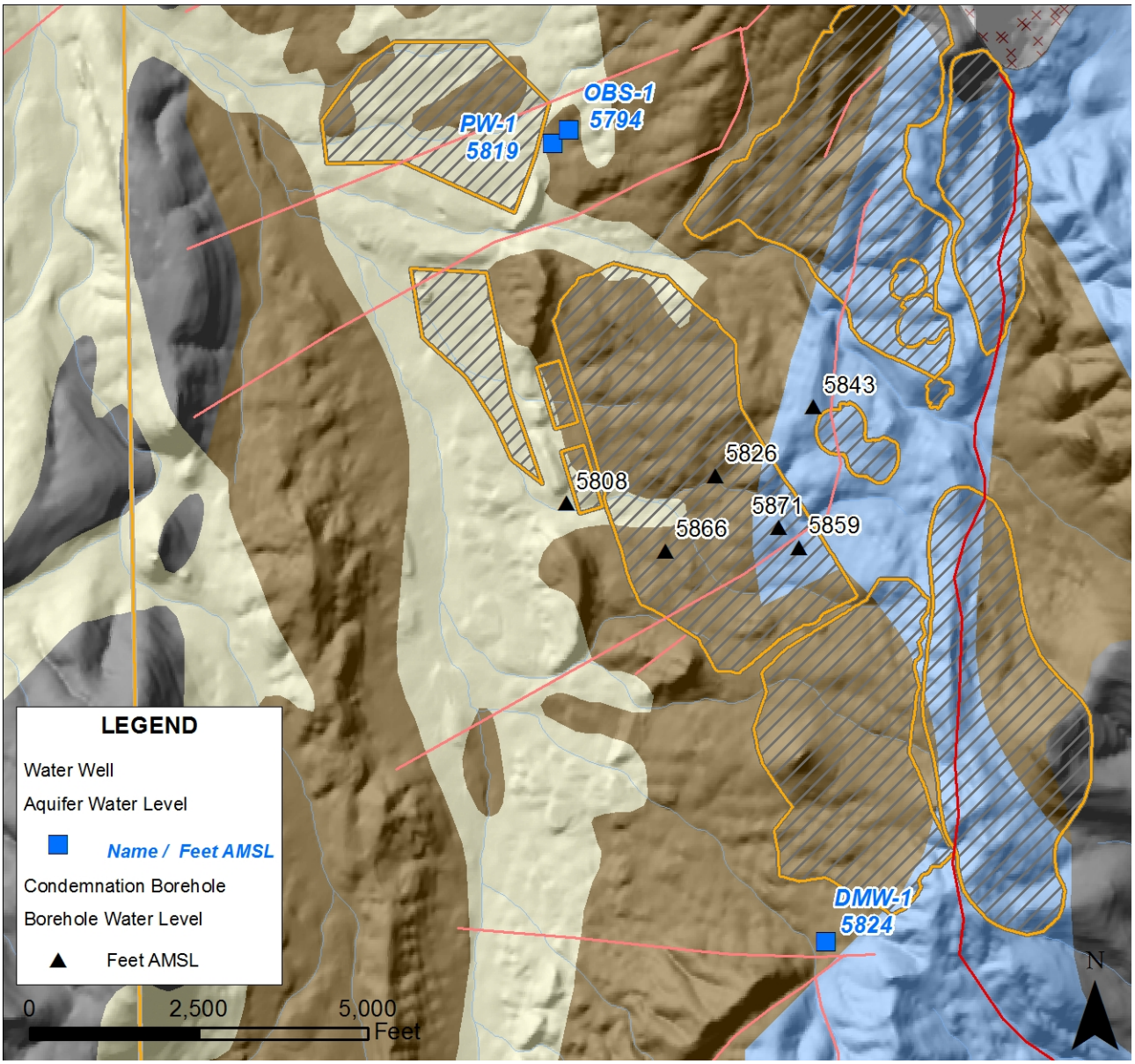


Figure 4 - Deep Bedrock Aquifer

PW-1 and OBS-1 boreholes are located approximately 250 feet apart. PW-1 was completed as a bedrock water supply well with a casing diameter of 10 inches. OBS-1 was completed as a piezometer with a casing diameter of 2 inches. At PW-1 and OBS-1 black shale and siltstone of the Pilot Shale were present from below the soil profile to approximately 600 and 500 feet bgs, respectively. Below the Pilot Shale, the Devil's Gate Limestone was encountered. The precise contact between the formations is uncertain as the contact is gradational but is generally picked

at the first massive carbonate. At PW-1 and OBS-1 locations a significant void was encountered at 760 and 665 feet bgs, respectively. All circulation was lost including loss of air pressure at the surface suggesting that the void was large and well connected. Because of the loss of circulation, limited hydrogeological and no lithological information was collected below this point. The presence of water was confirmed by monitoring bit air pressure on the drill rig. Water was first encountered in PW-1 and OBS-1 at 845 and 960 feet bgs, respectively. In both boreholes measured water levels were similar to the level of the void, well above the first encounter of groundwater, indicating that the carbonate aquifer is confined. The void was able to take water produced by the formation and the void likely controlled the measured water level in the open boreholes. This last observation suggests that water level information from open boreholes at the site, especially where large voids were encountered in the carbonate aquifer, is uncertain and may be of limited use in estimating the stable potentiometric surface of the aquifer. According to drill records during the condemnation drilling, a similar, large void was observed at various locations in the project site. The total depths of PW-1 and OBS-1 boreholes are 1,185 and 1,135 feet bgs, respectively.

At DMW-1, black shale and siltstone of the Pilot Shale were present from below the soil profile to 290 feet bgs. Below the Pilot Shale, the Devil's Gate Limestone was encountered. As with the other locations, the contact between the formations is gradational. At this location no voids were encountered in the Devil's Gate Limestone however the drillers noted a great deal of fracturing and mineral alteration was encountered in some of the geologic samples. The location of this well is near several faults. Water was encountered at 985 feet bgs and the total well depth was 1,035 feet bgs.

Pumping tests of DMW-1 and PW-1 were conducted in September 2012. Analysis of the test results are presented in Interralogic (2012) and are summarized here:

- The carbonate aquifer is highly productive demonstrating little drawdown during pumping
- Hydraulic conductivity averages 35 ft/day
- Water level response in OBS-1 suggests that aquifer may be locally and/or partially unconfined

This summary was used in the development of a conceptual groundwater flow model of the deep carbonate aquifer as described in Interralogic (2012).

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 degrees Fahrenheit. Concentrations of analytes are below the Nevada Profile II reference values, except for 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.

1.1.6.2 ALLUVIAL AQUIFER

Shallow groundwater is present discontinuously in the narrow band of alluvium beneath the unnamed, ephemeral stream west of the project area (Figure 5). The materials have low to moderate permeability due to presence of very fine grained materials in a matrix of very poorly sorted alluvium. Gradients suggest the small quantities of groundwater present flow towards the Newark Valley and/or infiltrate the bedrock below.

A field program was initiated by Interralogic in April 2012 with the goals of characterizing hydrogeology at the Pan Project site as well establishing a groundwater monitoring network for the shallow alluvial aquifer (Figure 5). Activities included:

- Installation of 4 shallow “alert” monitoring wells in the main drainage west of the Project site
- Collection of hydrogeologic information during drilling
- Testing hydraulic properties of the aquifers
- Collection of groundwater samples for laboratory analysis
- Measurement of static groundwater levels

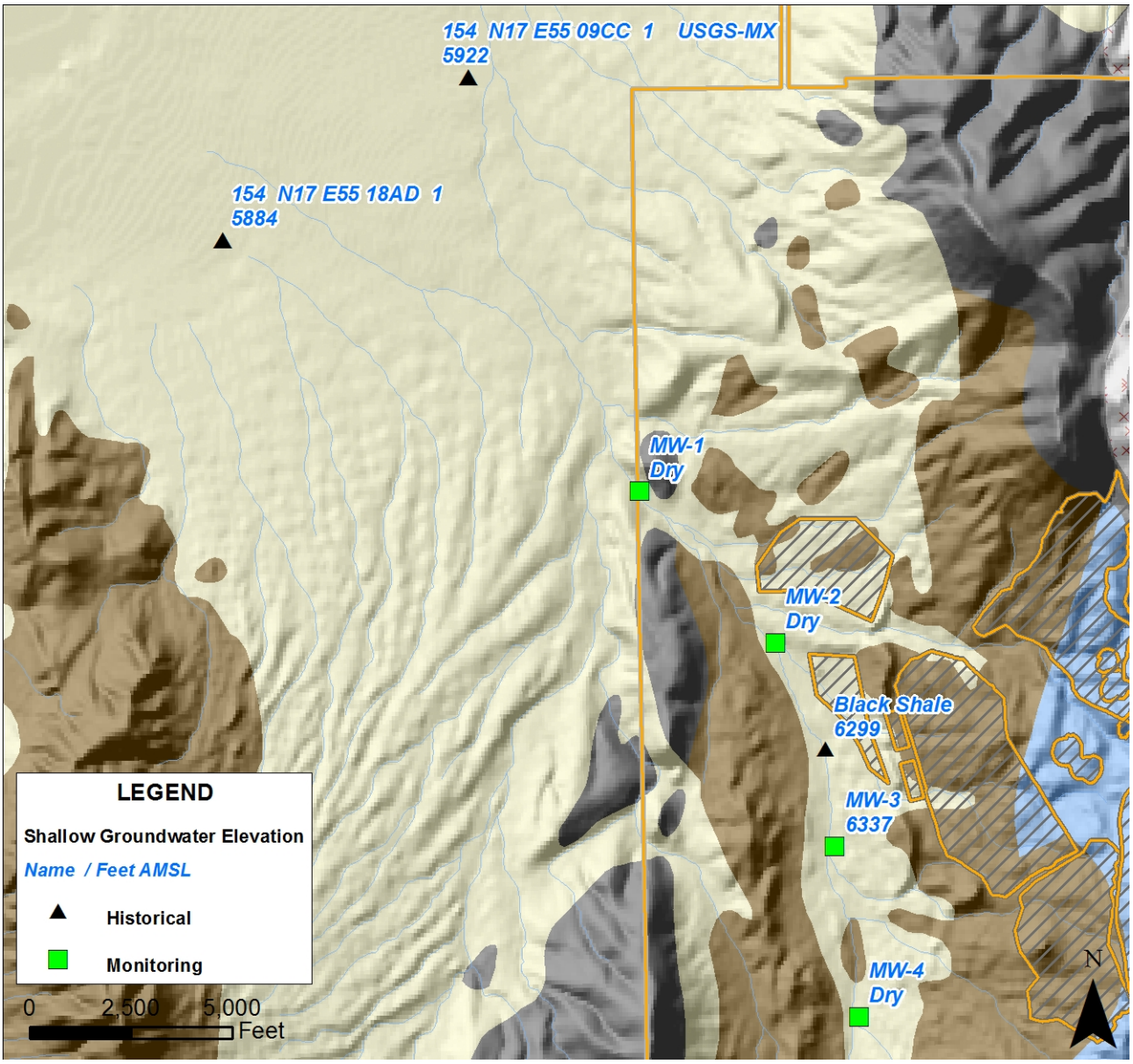


Figure 5 - Existing Wells in Alluvial Aquifer

The alluvial wells were drilled and installed from April 20-22, 2012 and are intended to provide shallow groundwater level information and groundwater samples for baseline and impacts monitoring. A summary of well completion information is presented in Table 2 and well construction details are provided in Appendix A. The boreholes were drilled with using mud rotary method to depths ranging from 29 to 50 feet bgs. Alluvium consisted of very poorly sorted, often clayey gravel to sandy clay. The total depth penetrated at least 3 feet of bedrock at each location. Boreholes at MW-2, MW-3, and MW-4 encountered black shale at the contact.

The northernmost location (MW-1) is located between two basalt covered hills and encountered basalt at the contact. Four-inch schedule-40 PVC casing was installed in each of the boreholes with screen extending below the alluvium-bedrock contact in order to capture alluvial groundwater which may exist only at this interface. The well completion diagrams are presented in the baseline report (Interralogic, 2012). After installation, wells were developed to the extent possible; however most of the wells were dry. Only MW-3 has water present above the screen.

Location	Easting*	Northing*	Ground Surface Elevation	Screen Depth**	Screened Geology	Elevation Water Encountered	Potentio metric Elevation	Hydraulic Conductivity (ft/day)
MW-1	6,516,434	46,859,504	6,223.6	28.3 - 18.3	Alluvium/Bedrock	Dry	Dry	N/A
MW-2	6,527,334	46,847,074	6,297.9	44.9 - 29.9	Alluvium/Bedrock	Dry	Dry	N/A
MW-3	6,532,045	46,830,726	6,377.4	39.1 - 24.1	Alluvium/Bedrock	N/A	6,340.9	0.8
MW-4	6,534,028	46,817,032	6,447.5	36.5 - 21.5	Alluvium/Bedrock	Dry	Dry	N/A

*NAD 83 UTM Meters

**All depths in feet from ground surface; elevation in feet amsl.

Table 2 - Completion Summary for Shallow Alluvial Wells

Based on the materials encountered (very poorly sorted gravel to clay), it was anticipated that the conductivity and storage would be on the low end of the ranges presented for basin fill sediments in Section 2.4.2. Well MW-3 was slug tested and analysis of responses indicates a conductivity of 0.7-0.8 ft/day consistent with the anticipated values (Interralogic, 2012).

Water level was also measured in the historical “Black Shale” well located between MW-2 and MW-3 (Figure 5). 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. No active use of the Black Shale well has been observed since Project activities commenced. Measurement during the recent field program indicates the same water level in 2012 (32 feet bgs).

2 GROUNDWATER MONITORING

Monthly groundwater monitoring is underway for the four alluvial monitoring wells, deep bedrock well, and water supply test well. After a year of monthly data has been collected, sampling will be continued quarterly. Monitoring events will consist of:

- Measuring depth to groundwater;
- Purging groundwater from the wells prior to sampling;
- Measuring field parameters throughout purging and before sample collection;
- Collecting groundwater samples for laboratory analyses; and
- Reviewing laboratory data and entering field and laboratory data into a database.

The alluvial and bedrock monitoring well would be maintained and sampled for ongoing compliance monitoring during operations.

2.1 WATER LEVEL MEASUREMENT AND PURGING

Before purging and sampling, the depth-to-water will be measured from a surveyed measuring point to the nearest hundredth of a foot. After measurement, if water is present, groundwater in the alluvial monitoring wells will be purged using either a disposable bailer and new length of polypropylene or nylon rope, or an electric submersible stainless-steel pump, such as a Grundfos Redi-flo2. If non-disposable or non-dedicated equipment is used, it will be decontaminated between monitoring locations using a phosphate-free detergent solution, made from Alconox or similar detergent, followed by a rinse with distilled water. At the deep bedrock monitoring and water supply wells (if sampled), purging and sample collection will be conducted using the installed (dedicated) pumps described in Sections 3.1 and 3.2. Throughout purging, field parameters of pH, specific conductivity, and temperature will be measured at regular intervals, with a minimum frequency of once for every casing volume purged from the well. Purging will continue until field parameters stabilize and at least three casing volumes of water have been extracted from the well. Field parameters will be considered stable if three consecutive measurements vary by less than 10% for specific conductivity and by less than 0.2 pH units. Purged water will be disposed on the ground surface.

2.2 SAMPLE COLLECTION AND ANALYSIS

Once purging is complete, samples will be collected for laboratory analysis of the dissolved fraction of the NDEP Profile II parameters, which are listed in Table 3. Samples will be filtered in the field using a new, disposable 0.45 micron filter, with the sample transferred through the filter using a peristaltic pump or hand pump and length of new or dedicated tubing. Sample bottles will be prepared by the analytical laboratory and pre-preserved, if required by the analytical method. Filled sample bottles will be labeled with a minimum of the date, time of

sample collection, sample location, and project name. Bottles will be placed in an ice-filled cooler and shipped express to the analytical laboratory. Appropriate lab and field blanks, and duplicates will be collected. Laboratory Chain-of-Custody procedures will be followed. Currently, the analytical laboratory is expected to be Western Environmental Testing Laboratory in Sparks, Nevada.

2.3 REVIEW OF LABORATORY RESULTS

Upon receiving the laboratory report, results will be reviewed for reasonableness and completeness. At a minimum, data review will include checks of the following:

- Samples were received by the laboratory at an appropriate temperature;
- All requested analyses were completed with the analytical method's recommended holding time;
- Charge balances are reasonable; and
- Laboratory quality assurance testing was completed and results are satisfactory.

Once the dataset is found to be acceptable, data will be imported to a database.

3 SCHEDULE

The monitoring activities described in this Monitoring Plan are scheduled to take place through the permitting phase of the project. Wells will then be used for operational compliance monitoring, as appropriate. Drilling, well installation, and well development of the monitoring wells and water supply test well were conducted in spring and summer of 2012. The initial quarterly monitoring event was conducted immediately after installation of the wells, after well development, with subsequent events occurring monthly through the present (as of the date of this update plan). Table 4 summarizes the Monitoring Plan schedule from the present to post closure. Additional details will be provided in the reclamation plan.

Parameter	Analytical Method	Reporting Limit (mg/L)	NDEP Reference Value (mg/L)
Profile I Parameters			
Alkalinity, Bicarbonate (as $CaCO_3$)	SM 2320B	1	--
Alkalinity, Total (as $CaCO_3$)	SM 2320B	1	--
Aluminum	EPA 200.7	0.045	0.2
Antimony	EPA 200.8	0.0025	0.006
Arsenic	EPA 200.8	0.005	0.010
Barium	EPA 200.7	0.01	2.0
Beryllium	EPA 200.7	0.001	0.004
Boron	EPA 200.7	0.1	--
Cadmium	EPA 200.7	0.001	0.005
Calcium	EPA 200.7	0.5	--
Chloride	EPA 300.0	1	400
Chromium	EPA 200.7	0.005	0.1
Copper	EPA 200.7	0.05	1.0
Fluoride	EPA 300.0	0.1	4.0
Iron	EPA 200.7	0.01	0.6
Lead	EPA 200.8	0.0025	0.015
Magnesium	EPA 200.7	0.5	150
Manganese	EPA 200.7	0.005	0.10
Mercury	EPA 200.8	0.0001	0.002
Nickel	EPA 200.7	0.01	0.1
Nitrate + Nitrite, Total (as N)	EPA 353.2	0.1	10
pH (standard units)	SM 4500-H+ B		6.5 - 8.5
Potassium	EPA 200.7	0.5	--
Selenium	EPA 200.8	0.005	0.05
Silver	EPA 200.7	0.005	0.1
Sodium	EPA 200.7	0.5	--
Sulfate	EPA 300.0	1	500
Thallium	EPA 200.8	0.001	0.002
Total Dissolved Solids	SM 2540C	10	1000
Vanadium	EPA 200.7	0.01	--
WAD Cyanide	SM 4500CNI	0.01	0.2
Zinc	EPA 200.7	0.01	5.0
Additional Parameters for Profile II*			
Bismuth	EPA 200.7	0.1	--
Cobalt	EPA 200.7	0.01	--
Gallium	EPA 200.7	0.1	--
Lithium	EPA 200.7	0.1	--
Molybdenum	EPA 200.7	0.01	--
Nitrogen, Total (as N)	Calc.	1.1	10
Phosphorus, Total	EPA 365.3	0.01	--
Scandium	EPA 200.7	0.1	--
Strontium	EPA 200.7	0.1	--
Tin	EPA 200.7	0.1	--
Titanium	EPA 200.7	0.1	--

NOTES:

-All analyses are for the dissolved fraction

*Profile II includes Profile I and the additional 11 parameters listed

Table 3 - Proposed Baseline Groundwater Monitoring Suite

Wells \ Time	2013	2014 Through Construction	During Operations	Post operations - for 2 years	After 2 years post closure
MW-1, MW-2, MW-3, MW-4	Monthly	Quarterly	Quarterly	To be determined	To be determined
DMW-1	Monthly	Quarterly	Quarterly	To be determined	To be determined
PW-1	Monthly	Quarterly	As needed	To be determined	To be determined

Table 4 - Proposed Schedule for Monitoring Plan

4 REFERENCES

Adair, D.H. and Stringham B.F., 1960. Intrusive Igneous Rocks of East Central Nevada, in Guidebook to the Geology of East-Central Nevada, Intermountain Association of Petroleum Geologists and Eastern Nevada Geological Society, 11th Annual Field Conference, Salt Lake City, Utah, 1960.

Eakin, T.E., 1960. Ground-water appraisal of Newark Valley, White Pine County, Nevada: Nevada Department of Conservation and Natural Resources, Ground-Water Resources-Reconnaissance Report 1, 33 p.

Gustavson Associates, 2010. NI 43-101 Preliminary Economic Assessment of the Pan Gold Project, White Pine County, Nevada, July 20.

Heilweil, V.M., and Brooks, L.E., eds., 2011. Conceptual Model of the Great Basin Carbonate and Alluvial Aquifer System: U.S. Geological Survey Scientific Investigations Report 2010-5193, 191 p.

Interralogic, 2012. Midway Gold US, Inc. - Baseline Hydrogeology Report, Pan Project, Nevada, November, 2012.

MDA, 2005. M. Gustin. Pan Gold Project, Updated Technical Report, White Pine County, Nevada USA, Prepared by Mine Development Associates Mine Engineering Services for Castleworth Ventures Inc. January 2005.

Nevada Division of Environmental Protection/Bureau of Mining Regulation & Reclamation, 2009. Analytical Suite - Profile II, version 12/30/09.

Smith, R.M., 1976. Part II, Mineral Resources, in Geology and Mineral Resources of White Pine County, Nevada, Nevada Bureau of Mines and Geology, Bulletin 85.

U.S. Geological Survey, 2007. Water Resources of the Basin and Range Carbonate-Rock Aquifer System, White Pine County, Nevada, and Adjacent Areas in Nevada and Utah, Scientific Investigations Report 2007-5261.

Welch, A.H., D.J. Bright, and L.A. Knochenmus (eds.) 2007. Water Resources of the Basin and Range Carbonate-rock Aquifer System, White Pine County, Nevada, and Adjacent Areas in Nevada and Utah: U.S. Geological Survey Scientific Investigations Report 2007–5261, 96 p.

WRCC, 2008. Western Regional Climate Center online data; www.wrcc.dri.edu/htmlfiles/westevap.ginal.html.

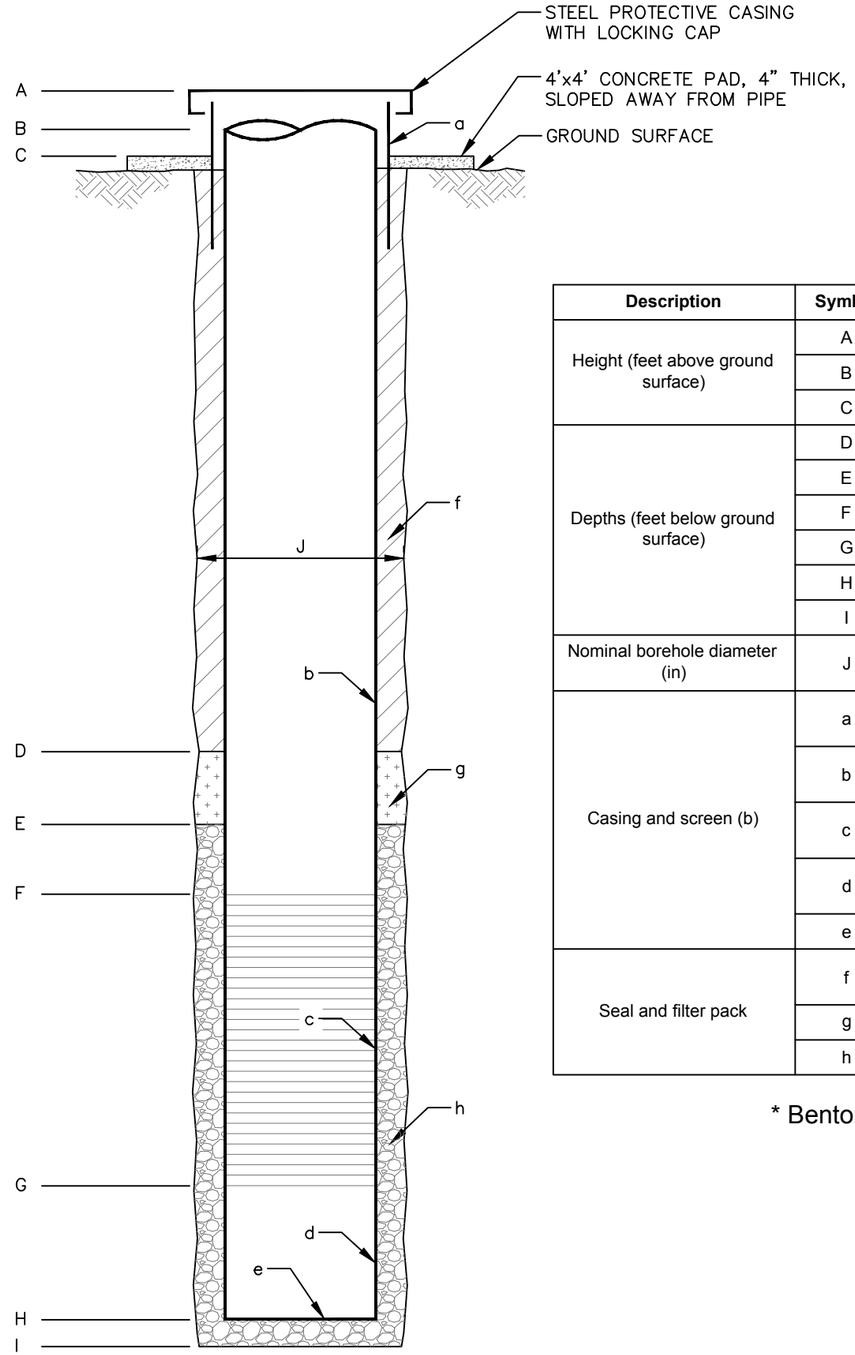
APPENDIX : COMPLETION DIAGRAMS FOR WELLS

LEGEND:

SURFACE SEAL

PELLET SEAL

FILTER PACK



NOT TO SCALE

Description	Symbol	Description	MW-1	MW-2	MW-3	MW-4
Height (feet above ground surface)	A	Top of outer casing with cover	1.6	1.9	2.0	1.8
	B	Top of inner casing	1.4	1.6	1.9	1.5
	C	Top of concrete pad	0.3	0.3	0.3	0.3
Depths (feet below ground surface)	D	Top of bentonite	14.1	16.0	15.7	14.9
	E	Top of filter pack	16.2	18.1	20.9	20.0
	F	Top of Screen	18.3	29.9	24.1	21.5
	G	Bottom of screen	28.3	44.9	39.1	36.5
	H	Bottom of end cap	28.6	45.2	39.4	36.8
	I	Bottom of hole	28.6	45.2	39.4	37.3*
Nominal borehole diameter (in)	J	Borehole diameter	8.5+	8.5+	8.5+	8.5+
Casing and screen (b)	a	8-inch steel protective casing				
	b	4-inch schedule 40 PVC casing				
	c	4-inch schedule 40 PVC well screen, 0.020-inch slot size (20 slot)				
	d	4-inch schedule 40 PVC casing				
	e	4-inch PVC well end cap				
Seal and filter pack	f	Bentonite grout				
	g	Bentonite pellets				
	h	#8 Silica Sand				

* Bentonite chips placed from 37.3 to 50.0 feet below ground surface.

PROJECT NO.: 100013

INTERRA logic
4715 Innovation Dr., Suite 110
Fort Collins, Co 80525
970.225.8222

AS-BUILT ALLUVIAL MONITORING WELL

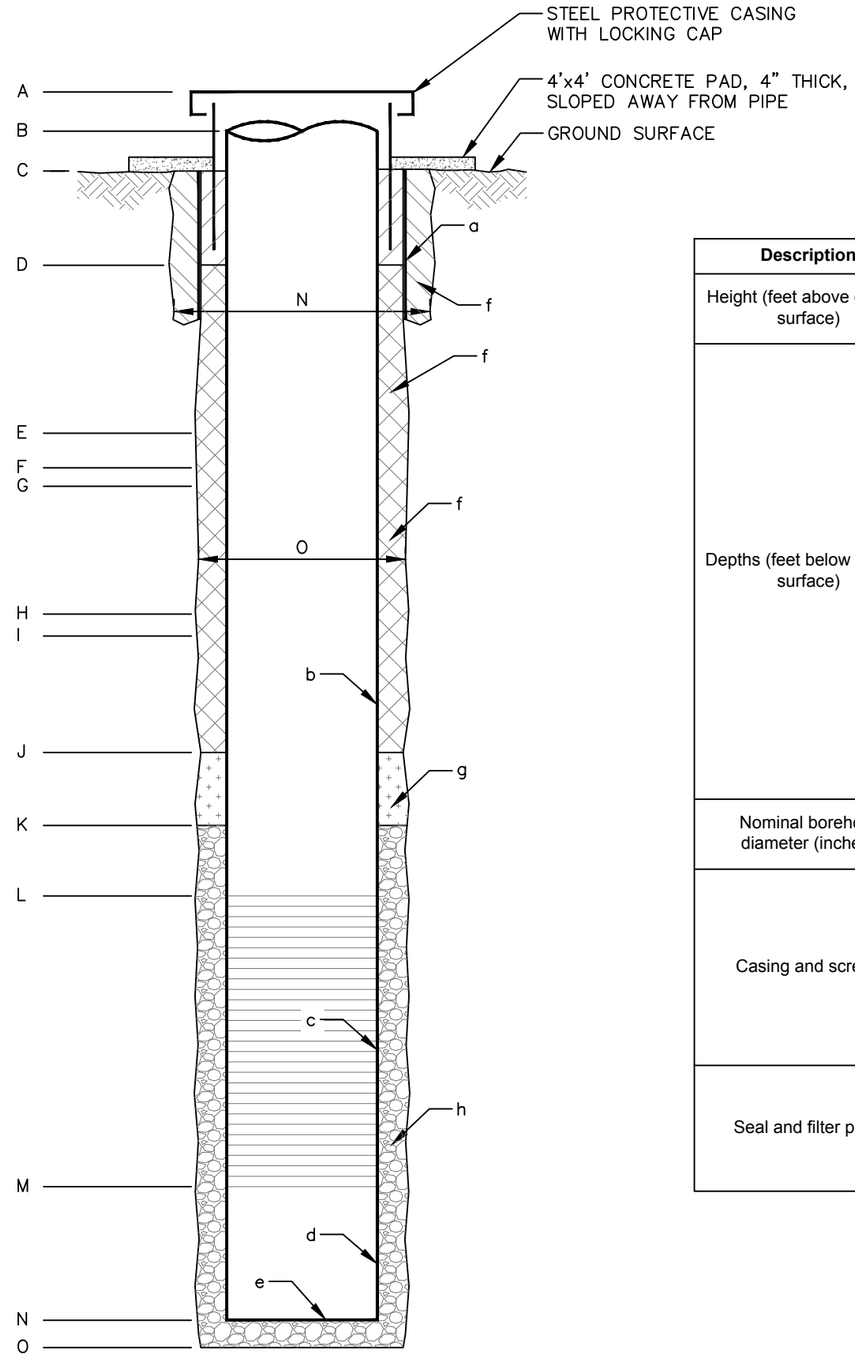
PREPARED FOR:

MIDWAY GOLD

DRAWING FILENAME: I:\Projects\100013 - Midway Gold-Pumpkin\Midway Cad\Dwgs\100013_Well Asbuilts.dwg LAYOUT NAME: Asbuilt Alluvial Monitoring Well DATE: Aug 27, 2013 - 8:44am CAD OPERATOR: dhobbs
LIST OF XREFS: [Interrabgk-border_2in Project WELL] [Interrabgk-border_22x34_ansiD]

LEGEND:

- CONDUCTOR CASING SEAL
- CEMENT SURFACE SEAL
- WELL SEAL
- PELLET SEAL
- FILTER PACK



NOT TO SCALE

Description	Symbol	Description	Bedrock Observation Well
Height (feet above ground surface)	A	Top of outer casing and cap	2
	B	Top of well casing	1
Depths (feet below ground surface)	C	Top of cement suface seal	0
	D	Top of grout seal	10
	E	Top of bentonite chips	93
	F	Top of plastic plug	105
	G	Top of grout seal (unconfirmed)	106
	H	Top of pellet seal (unconfirmed)	648
	I	Top of grout seal	665
	J	Top of pellet seal	918
	K	Top of filter pack	930
	L	Top of Screen	950
	M	Bottom of screen	1100
	N	Bottom of sump/end cap	1110
	O	Bottom of hole	1113
Nominal borehole diameter (inches)	P	Conductor casing borehole diameter	9.875
	Q	Main borehole diameter	6.250
Casing and screen	a	6.75-inch protective steel casing	20ft of casing
	b	2-inch schedule 80 PVC	
	c	2-inch schedule 80 PVC screen, 0.020-inch slot size (20 slot)	
	d	2-inch schedule 80 PVC	
	e	2-inch schedule 80 PVC end cap	
Seal and filter pack	f	Bentonite grout, 30% solids by weight	
	g	Bentonite pellets, coated 3/8-inch	
	h	#8 silica sand	

PROJECT NO.: 100013

INTERRA logic
4715 Innovation Dr., Suite 110
Fort Collins, Co 80525
970.225.8222

AS-BUILT DEEP BEDROCK OBSERVATION WELL

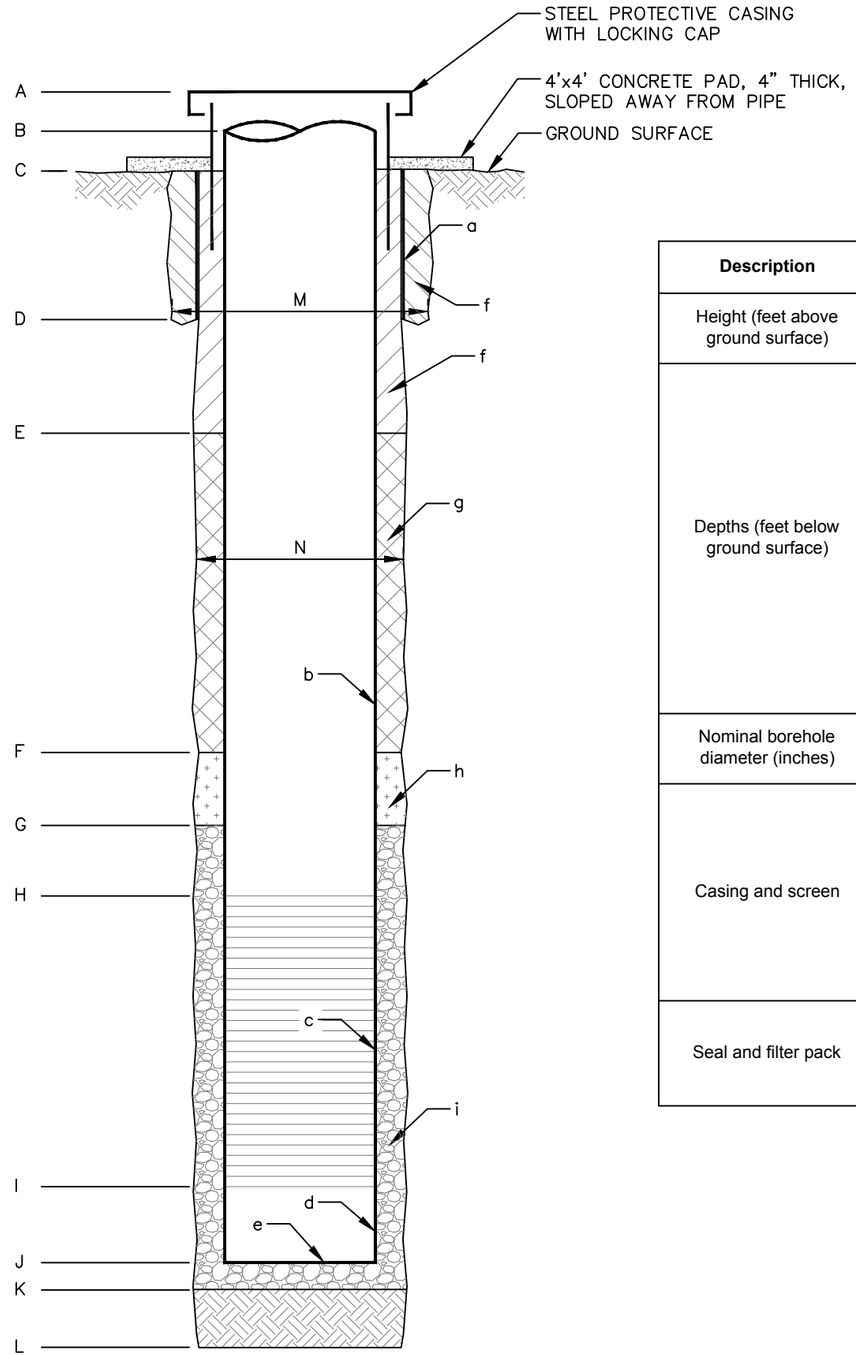
PREPARED FOR:

MIDWAY GOLD

DRAWING FILENAME: i:\Projects\100013 - Midway Gold-Paradise\Midway Gold\Dwgs\100013_Well Adsbuilts.dwg LAYOUT NAME: Adsbuilt Deep Observation Well DATE: Aug 27, 2012 - 9:44am CAD OPERATOR: dlhobbs
LIST OF XREFS: [InTerraLogic-Border_Plan Project WELL] [InTerraLogic-Border_22x34_ANSI]

LEGEND:

- CONDUCTOR CASING SEAL
- CEMENT SURFACE SEAL
- WELL SEAL
- PELLET SEAL
- FILTER PACK
- SLUFFED MATERIAL



NOT TO SCALE

Description	Symbol	Description	Bedrock Monitoring Well
Height (feet above ground surface)	A	Top of outer casing and cap	2
	B	Top of well casing	1
Depths (feet below ground surface)	C	Top of cement suface seal	0
	D	Bottom of conductor casing seal	20
	E	Top of bentonite slurry seal	50
	F	Top of bentonite pellet seal	930
	G	Top of filter pack	940
	H	Top of Screen	975
	I	Bottom of screen	1035
	J	Bottom of sump/end cap	1040
	K	Top of sluffed off material	1041
	L	Bottom of hole	1045
Nominal borehole diameter (inches)	M	Conductor casing borehole diameter	16.5 or greater
	N	Main borehole diameter	10.5 or greater
Casing and screen	a	Protective steel casing	
	b	6-inch schedule 80 PVC	
	c	6-inch schedule 80 PVC screen, 0.020-inch slot size (20 slot)	
	d	6-inch schedule. 80 PVC	
	e	6-inch schedule 80 PVC end cap	
Seal and filter pack	f	Cement grout	
	g	Bentonite pellets	
	h	Filter pack, 1/2 inch	

PROJECT NO.: 100013

INTERRA logic
4715 Innovation Dr., Suite 110
Fort Collins, Co 80525
970.225.8222

AS-BUILT BEDROCK MONITORING WELL

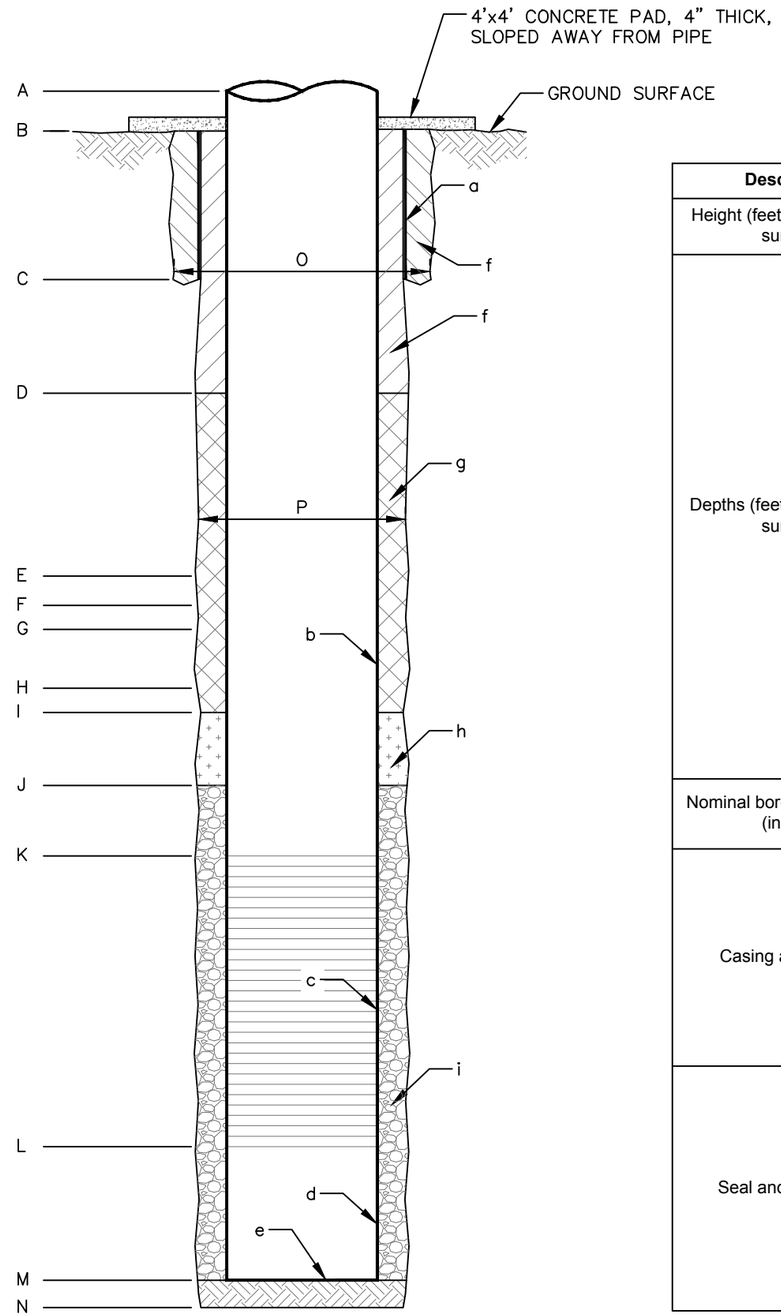
PREPARED FOR:

MIDWAY GOLD

DRAWING FILENAME: L:\Projects\100013 - Midway Gold-Pueblo\Midway Cost\Dwgs\100013_Well Asbuilts.dwg LAYOUT NAME: Asbuilt Deep Monitoring Well DATE: Aug 27, 2012 - 9:44am CAD OPERATOR: cfindlead
LIST OF XREFS: [xrefs:logic-doster_2yr Project WELL] [xrefs:logic-doster_22x34_asbuilt]

LEGEND:

- CONDUCTOR CASING SEAL
- CEMENT SURFACE SEAL
- WELL SEAL
- PELLET SEAL
- FILTER PACK
- SLUFFED MATERIAL



NOT TO SCALE

Description	Symbol	Description	Bedrock Water Well
Height (feet above ground surface)	A	Top of well casing	1.2
Depths (feet below ground surface)	B	Top of cement suface seal placed by tremmie	0
	C	Bottom of conductor casing seal	20
	D	Top of bentonite slurry seal placed by tremmie	50
	E	Top of bentonite chips placed by tremmie	733
	F	Major void	760
	G	Top of bentonite grout slurry seal placed by tremmie	787
	H	Top of gravel placed by gravity	816
	I	Top of bentonite pellet seal placed by tremmie	821
	J	Top of gravel pack placed by gravity	831
	K	Top of Screen	851.0
	L	Bottom of screen	1152.0
	M	Bottom of plug/Top of sluff	1162.5
	N	Bottom of hole	1174
Nominal borehole diameter (inches)	O	Conductor casing borehole diameter	20.5 or greater
	P	Main borehole diameter	17.5
Casing and screen	a	20-inch nominal steel casing	
	b	10-inch nominal steel casing	
	c	10-inch nominal steel louvered well screen	
	d	10-inch nominal steel casing	
	e	Steel welded cap	
Seal and filter pack	f	Cement grout	
	g	Bentonite grout with 30% solids (Aqua Guard; Baroid, Inc.) or bentonite chips (EnviroPlug; Wyo-Ben, Inc.)	
	h	Bentonite pellets, coated 3/8-inch (Kwik-Plug; MiSwaco, Inc.)	
	i	Filter pack, 1/2 and 3/4 inch (SRI Supreme; Silica Resources, Inc.)	

PROJECT NO.: 100013

INTERRA logic
4715 Innovation Dr., Suite 110
Fort Collins, Co 80525
970.225.8222

AS-BUILT BEDROCK WATER WELL

PREPARED FOR:

MIDWAY GOLD

DRAWING FILENAME: L:\Projects\100013 - Midway Gold-Paradise\Midway Cat\Dwgs\100013_Well Asbuilts.dwg LAYOUT NAME: Asbuilt Bedrock Water Well DATE: Aug 27, 2012 - 8:44am CAD OPERATOR: ctrobled
LIST OF XREFS: [W:\terralogic-doster_2\ps Project WELL] [W:\terralogic-doster_2\3-34_asbuilt]