Barrick Gold Corporation
460 West 50 North, Suite 500
Salt Lake City, Utah
84101

27 June 2015

Al Hoffman, P.Eng.
Chief Inspector and Executive Director, Health & Safety

British Columbia Ministry of Energy and Mines
Health and Safety and Permitting Branch
PO Box 9320 Stn Prov Govt
Victoria, BC
V8W 9N3

Re: Understanding of foundation conditions, water balance adequacy and filter adequacy at the closed Nickel Plate tailings impoundment near Hedley, BC

Dear Mr. Hoffman:

In response to the instructions of your memorandum dated 03 February 2015 to our Mr. Robbin Harmati, BC Properties Closure Manager for Barrick Gold Corporation (Barrick), I have reviewed the available information regarding the foundation conditions, the water balance and the filter adequacy (specifically, the internal zoning) of the constructed earthfill embankment of the tailings impoundment at the closed Nickel Plate mine site. This letter has been prepared and submitted to the BC Ministry of Energy and Mines (MEM) to summarize the results of my review findings, following the item numbering system provided in your memorandum of 03 February. The figures pertaining to the closed Nickel Plate Tailings Storage Facility (TSF) that are attached to this letter have been taken from the 2014 annual dam safety inspection report (Knight Piésold, 2014). To facilitate reference, new sequential numbers in red font have been added to the attached figures.

Nickel Plate Mine and Tailings Impoundment Background

The closed Nickel Plate mine site is located approximately 3 km northeast of Hedley, BC; the open pit mine operated from early 1987 to October 1996 and produced a reported 760,000 oz of gold from about 12,000,000 tonnes of ore. Tailings generated from the two-stage leaching and Merrill-Crowe zinc precipitation processing circuit were deposited in the Nickel Plate TSF. During the initial years of operation, hydrogen peroxide was used to destroy cyanide in the tailings stream, prior to discharge to the TSF; from September 1991 to end of operations, an Inco SO_2/air cyanide destruction process was employed. Figure 1 shows the location of the Nickel Plate site and the general layout of the closed TSF, the Mascot Pond Freshwater

Reservoir located just downstream of the southwestern corner of the Nickel Plate TSF that was developed to store runoff water for process use, and other ancillary structures.

Construction of the Starter Dam for the Nickel Plate TSF, the Main Dam and West Saddle Dam that form the Mascot Pond Freshwater Reservoir and the ancillary structures was completed from mid-July to early November 1986. The findings of the geotechnical site investigation and laboratory testing program, which included 42 test pits and 27 boreholes as well as index property, compaction, consolidation and permeability determinations, were presented in the final design report (Robinson Dames & Moore, 1986a).

The Nickel Plate TSF Starter Dam comprised a compacted, well-graded till embankment with a vertical, central chimney drain and a downstream blanket with connecting finger drains extending to the downstream toe. The chimney, blanket and finger drains were built of relatively clean granular soils. The Mascot Pond Freshwater Reservoir Dams comprised compacted, well-graded till embankments, with downstream blanket drains and upstream riprap protection. Upstream and downstream slopes for the Starter Dam were designed and built to 1.75H:1V (horizontal:vertical) and 2H:1V, respectively. The Main and West Saddle Dams of the Freshwater Reservoir were designed and built with 2H:1V upstream and downstream slopes.

As documented in the final design report (Robinson Dames & Moore, 1986a) and the as-built completion report (Robinson Dames & Moore, 1986b) for the tailings and water storage dams, embankment foundation conditions generally consisted of dense to very dense till overlying weathered and/or fractured breccia or granodiorite bedrock, transitioning with depth to less weathered and less fractured bedrock. Lenses of coarse-grained glacio-fluvial outwash sediments, generally dense to very dense and of inferred limited thickness and lateral extent, were encountered in some of the topographic lows within the till. Lenses of fine-grained volcanic ash and ash-rich soils were also reported in some of the site investigation boreholes and test pits, all generally at shallow depth. The as-built report provides further details of the construction activities, such as encountered conditions; foundation preparation which included removal of exposed soft and fine-grained materials such as organic soils and ash-rich soils; embankment fill zoning and completion; and quality control and quality assurance testing.

The Nickel Plate TSF dam crest was raised seven times from its Starter Dam configuration over the nearly ten-year operating life of the impoundment, generally by centerline or upstream construction methodologies as summarized in Table 1. In 1998, a closure cover of about 0.6 m coarse rockfill and 0.6 m overlying till was placed over most of the tailings surface and hydroseeded. The only portion of the impoundment not capped and vegetated was the remnant decant pond located in the northwest corner of the TSF, which accounted for an estimated 17% of the total tailings surface area (Barrick, 2005).

Table 1. Nickel Plate TSF Dam Construction History

Stage	Year	Crest Elevation (famsl)	Height (ft) at Maximum Section Station 22+00	Construction Methodology	Downstream Slope
Starter	1986	4,474	99	Centerline	2H:1V
I	1989	4,505	130	Centerline	1.75H:1V
II	1990	4,510	135	Upstream	1.75H:1V
III	1991	4,525 – 4,532[a]	156	Downstream	2H:1V[b]
IV	1992	4,538	163	Centerline	2H:1V
V	1993	4,542	167	Upstream	2H:1V
VI	1994	4,556	181	Upstream	2H:1V
VII	1995	4,565 – 4,572[c]	197	Upstream	2H:1V
Closure	1998	n/a	n/a	Cover soil	n/a

[a] Tailings dam crest raised to variable elevation of 4,525 famsl to 4,532 famsl before 1991 construction season terminated early due to poor weather.
[b] Downstream slope built to 1.75H:1V below elevation 4,449 famsl and 2H:1V above elevation 4,449 famsl for Stages III to VII.
[c] Final tailings dam crest elevation 4,572 famsl at southwest abutment, transitioning to 4,565 famsl at northeast abutment.

The Nickel Plate TSF has been the subject of extensive geotechnical inspections, reviews and audits throughout its design, construction, operation and closure history. Design and as-built construction reports were prepared for the tailings dam crest raises, and specific studies to evaluate groundwater hydrogeology in and around the tailings impoundment, assess embankment stability, examine tailings consolidation performance and define closure cover options were conducted and reported on from operation to closure phases. Most of these studies included site investigation and laboratory testing programs, the data from which were examined as part of the current review of foundation and embankment conditions.

Routine inspections of the Nickel Plate TSF continue to be conducted and logged by Barrick closure site staff on a twice-daily basis, and the site staff also collects monthly readings from the tailings mass, embankment foundation piezometers, standpipes and monitoring wells. Knight Piésold Consulting Ltd. (Knight Piésold) has conducted formal annual tailings facility safety inspections since 1992 and regular independent dam safety reviews are completed by AMEC Environment & Infrastructure (e.g. AMECa, 2012). Additionally, Barrick's independent Review Team of Mr. M.A.J. (Fred) Matich and Dr. N.R. Morgenstern have conducted geotechnical performance reviews of the Nickel Plate TSF (Matich & Morgenstern, 2002; Matich & Morgenstern, 2011). I have visited the site on numerous occasions over the past seven years, including to coordinate the independent geotechnical performance reviews.

In late 2014, Barrick submitted to the BC MEM the most recent dam safety inspection report (Knight Piésold, 2014), an independent review of the dam safety inspection report by Golder Associates Ltd. (Golder, 2014) and a dam breach and inundation study by EBA Engineering Consultants Ltd. (EBA, 2013) for the Nickel Plate tailings impoundment, in fulfillment of your Order of 18 August 2014. A Dam Classification of Very High was assigned to the Nickel Plate

TSF and the Mascot Pond Freshwater Reservoir, following the scheme summarized in Table 2-1 of the 2013 Dam Safety Guidelines of the Canadian Dam Association (CDA, 2013).

Figures 2 and 3 show plan view locations of geotechnical monitoring instrumentation for the Nickel Plate TSF, to March 2011 closure conditions. Figures 4 to 6 provide reference cross-sections through the TSF embankment dam corresponding to the locations as indicated in Figures 2 and 3, with some details of inferred subsurface geology provided. Figure 7, taken from the recent, independent stability and dam breach assessment (EBA, 2013) shows a typical cross-section through the main Mascot Pond Freshwater Reservoir Dam.

More detailed descriptions of the tailings, embankment fill and foundation materials encountered in the site investigation work and characterized by laboratory testing can be found in the relevant technical reports available at the Nickel Plate Mine document archive at site, some of which have been cited in this letter. Key reports related to tailings impoundment water balance modeling and management during operation and in post-closure are also available in the site archives.

<u>Understanding of TSF Dam Risk Items in 03 February 2015 Memorandum</u>

1. Undrained shear failure of silt and clay foundations

    According to the Independent Expert Engineering Investigation and Review Panel, failure of the Mount Polley TSF was attributed to the failure to identify a continuous glaciolacustrine silt layer underlying the Perimeter Embankment and recognize that the material was susceptible to undrained failure in a normally consolidated state under the loading associated with the increasing height of the TSF (Province of British Columbia, 2015). A review of the site investigation database for the Nickel Plate TSF and adjacent Mascot Pond Freshwater Reservoir resulted in the following conclusions:

    a. Similar foundation conditions (i.e. an extensive layer of fine-grained soil susceptible to undrained failure under loading by the TSF) do not exist below the Nickel Plate embankments.

    b. Sufficient site investigations have been completed to have confidence in this assessment.

    c. The embankments' designs accounted appropriately for their respective, inferred foundation conditions (generally, dense to very dense till overlying bedrock), which did not include silt and clay soils susceptible to undrained failure under the imposed loading.

    d. No new subsurface investigation work is required to verify embankment foundation conditions.

    Furthermore, as tailings deposition and thus embankment crest raising at the Nickel Plate TSF terminated in October 1996, and the approximately 1.2 m thick closure cover soil placement was completed in 1998, there has been no new, significant loading imposed on the embankment or foundation materials for almost twenty years.

2. Water balance adequacy

   There is a small, unlined remnant pond located at the northwest corner of the Nickel Plate TSF, well away from the embankment, and four high density polyethylene (HDPE) geomembrane-lined ponds in the northeast corner of the impoundment. Two of the HDPE-lined ponds are used for permanent storage of the sludge generated by the water treatment plant (WTP) located downstream (south) of the TSF. The other two lined ponds are used for temporary storage of water captured from the East, Central and West Seepage Zones by a series of ditches and wells located downstream of the TSF. The captured seepage water is collected in four sumps also located around the downstream toe of the TSF before being pumped to the two HDPE-lined ponds for storage and eventual delivery to the WTP and subsequent release. A more detailed description of water inputs and management related to the Nickel Plate TSF is provided in the project documents, including AMEC (2012b). No detailed water balance model has been developed or maintained for the TSF closure condition.

   a. Currently, an estimated maximum 20,000 m^3 of water is stored in the remnant pond on the TSF during freshet conditions only; in late summer, that pond volume is typically less than 2,000 m^3. Approximately 71,250 m^3 of water from the pond was pumped to the WTP in 2014, at a fairly steady rate of about 8 m^3/hr throughout the year. The maximum stored water volume in the Mascot Pond Freshwater Reservoir is about 10,000 m^3 during freshet, and the estimated minimum stored volume is 2,000 m^3 in late summer. The only mechanisms for water loss from the Mascot Reservoir are seepage, which ends up being captured by the West Seepage Zone collection system, and evaporation.

   b. No new process-affected water or other surplus mine water has been added to the remnant, unlined pond on the TSF since the end of mine and mill operations and placement of the TSF cover soil, some twenty years ago. The only water input to the unlined pond is from direct precipitation, snowmelt and runoff. Water from the unlined pond is pumped along with the captured seepage water stored in the two lined ponds to the WTP for treatment and release.

   c. Currently, Barrick has no plans in place or under development to release water directly from the remnant, unlined pond to the environment. As noted above, some 71,250 m^3 of water from the unlined pond are pumped annually to the on-site WTP. This water, along with seepage water collected from recovery wells, is treated and released to Hedley Creek under Environmental Permit PE-07613.

   d. The minimum beach width at the closed Nickel Plate TSF, from the remnant, unlined pond to the nearest section of the embankment, is approximately 140 m. Under current closure conditions, there will be little if any anticipated variation in this width.

e. There has been no significant new loading of the Nickel Plate TSF embankment and foundation since site closure, and the relatively dense to very dense till that comprises the foundation soil precludes concern over any ongoing consolidation processes that could deform the TSF embankments to an amount sufficient to compromise internal drainage features or cause other secondary damage. Data from the six surface settlement gauges installed on the TSF cover and monitored since 1998 indicate no significant change in elevation over the past five years (Knight Piésold, 2014). Estimates of seismically-induced displacements and post-earthquake deformations, including the assumption of residual (liquefied) tailings strengths, indicate no loss of embankment integrity under the maximum credible earthquake (Knight Piésold, 2014). Lastly, there is very little free water stored on the closed TSF and ongoing monitoring of embankment, foundation and tailings mass piezometers indicate pore pressure levels well below established threshold values to trigger slope stability reviews.

f. The closed Nickel Plate TSF maintains sufficient freeboard to contain all of the inflow from the 24-hour probable maximum precipitation (PMP) over its undiverted catchment area (Knight Piésold, 2014). Water accumulated on the TSF from major storm events can be pumped from the remnant pond for release via the WTP. Similarly, adequate freeboard is maintained at the Mascot Pond Freshwater Dam to store the probable maximum flood (PMF) generated over its modest catchment (Knight Piésold, 2014). In fact, Barrick plans to essentially empty (pump out) the remaining water from the Mascot Pond Freshwater Reservoir to one of the HDPE-lined storage ponds later this year, in the expectation that the Mascot Reservoir will maintain that very small water volume for a considerable time.

g. Barrick considers its understanding and management of the small remnant pond on the Nickel Plate TSF appropriate for current site closure conditions, and thus has no plan or schedule in progress to conduct new work related to the water balance.

3. Filter adequacy

Internal drainage features were included in the Nickel Plate TSF and the Mascot Pond Reservoir embankment designs and construction, and appeared to have functioned as intended throughout the operating (active tailings deposition) life of the facilities. As indicated by the long-term piezometer data as well as periodic piezocone sounding campaigns in the tailings mass, the phreatic surface elevation and seepage gradients in the tailings impoundment have decreased since the end of operations.

a. As the tailings impoundment has been in closure for almost twenty years with a small, remnant pond located well away from the crest, adequate (inactive) beach width has been established. Furthermore, the facility maintains sufficient freeboard to store the 24-hour PMF on its closure cover without spilling over the perimeter crest. As-built filter and drainage zones within the embankment were built to design specifications and intent, and are expected to continue to provide protection against internal seepage erosion in closure. Over the long-term, as the tailings mass continues to drain down, service demands on the internal drainage elements will continue to decrease.

b. As stated in the as-built report for the TSF Starter Dam and the Freshwater Reservoir Dams (Robinson Dames & Moore, 1986b), the drainage blankets and finger drains were constructed to design requirements. Slight modifications were made to the construction procedure of the TSF Starter Dam chimney drain, and a minor deviation to the chimney drain design alignment was compensated for during construction (Robinson Dames & Moore, 1986b). All filter and drain materials complied with their design specifications for gradation, placement and compaction. Where extensions to the foundation and embankment drainage features were incorporated in subsequent raises of the tailings dam crest, the materials and construction methodologies also met design intent (e.g. SRK-Robinson Inc., 1990).

c. Barrick has not identified any gaps in the design, construction or performance of the Nickel Plate TSF embankment filter or drainage materials, and accordingly has no plan or schedule related to the investigation or remediation of these internal embankment zones. Barrick will continue to monitor and report pore pressure and seepage data as obtained by the instrumentation in the TSF embankment, foundation and tailings mass.

Letter Closure

I trust that the information contained in this letter is sufficient for your present needs. Please contact me should you have any questions or concerns.

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA M. A. B. Shelbourn

27 June 2015

Michael Shelbourn, P.Eng. (BC)
Senior Manager, Geotechnical Engineering – Corporate Technical Services
Barrick Gold Corporation

Telephone: (801) 990-3853
Cell: (801) 556-8484
Email: mshelbourn@barrick.com

Reference Reports – Nickel Plate Tailings Impoundment

AMEC Environment & Infrastructure, 2012a. Nickel Plate Mine near Hedley, British Columbia, 2012 Dam Safety Review, File No. VM00407A.1200, 21 November 2012.

AMEC Environment & Infrastructure, 2012b. Nickel Plate Mine Site Status Summary Report, File No. VM00407A Phase 1100, 13 December 2012.

AMEC Environment & Infrastructure, 2014. Nickel Plate Mine Tailings Facility OMS Manual and EPP – Rev 5, File No. VM00407B-100, 26 November 2014.

Barrick Gold Corporation, 2005. Nickel Plate Mine Annual Reclamation Report to December 31, 2004, Submitted to the BC Ministry of Energy and Mines Minerals Division, Permit M-173, 10 March 2005.

Canadian Dam Association, 2013. Dam Safety Guidelines, ISBN 978-0-7726-5802-9, 2013.

Canadian Dam Association, 2014. Technical Bulletin: Application of Dam Safety Guidelines to Mining Dams, ISBN 978-0-9936319-2-4, 2014.

EBA Engineering Consultants Ltd., 2013. Nickel Plate Mine Tailings Storage Facility & Mascot Pond Dam Engineering Assessment 2013, File No. K13103111-01, 12 December 2013.

Golder Associates Ltd., 2014. Independent Review of 2014 Dam Safety Inspection Report, Nickel Plate Tailings Dams, Ref. No. 1412161-005-Rev0-3000, 26 November 2014.

Knight-Piésold Ltd., 2008. Nickel Plate Mine Embankment Stability Analysis, File No. 10181/12.01, 10 February 1998.

Knight-Piésold Ltd., 2014. Barrick Gold Inc. Nickel Plate Mine, 2014 Tailings Facility Annual Report, File No. VA101-3/19, Rev. 0, 25 November 2014.

Matich, M.A.J. and Morgenstern, N.R., 2002. Nickel Plate Mine, Hedley Area, B.C., Tailings Impoundment Performance Review, Confidential Report to Barrick Gold Corporation, July 2002.

Matich, M.A.J. and Morgenstern, N.R., 2011. Nickel Plate Mine, Penticton, B.C., Tailings Impoundment Performance Review Report No. 2, Confidential Report to Barrick Gold Corporation, April 2011.

Province of British Columbia, 2015. Report on Mount Polley Tailings Storage Facility Breach, Independent Expert Engineering Investigation and Review Panel, 30 January 2015.

Robinson Dames & Moore, 1986a. Final Design Report, Tailings Dam, Nickel Plate Project, Hedley, British Columbia, Job No. MG-21T, 14 May 1986.

Robinson Dames & Moore, 1986b. Report on 1986 Construction Activities, Tailings Disposal and Water Storage Dams, Nickel Plate Project, Hedley, British Columbia, Job No. MG-21, 23 December 1986.

SRK-Robinson Inc., 1990. Report on 1989 Construction Activities, Tailings Dam Extension, Nickel Plate Mine, Hedley, British Columbia, Job No. MG-31, 29 January 1990.

Attached Figures

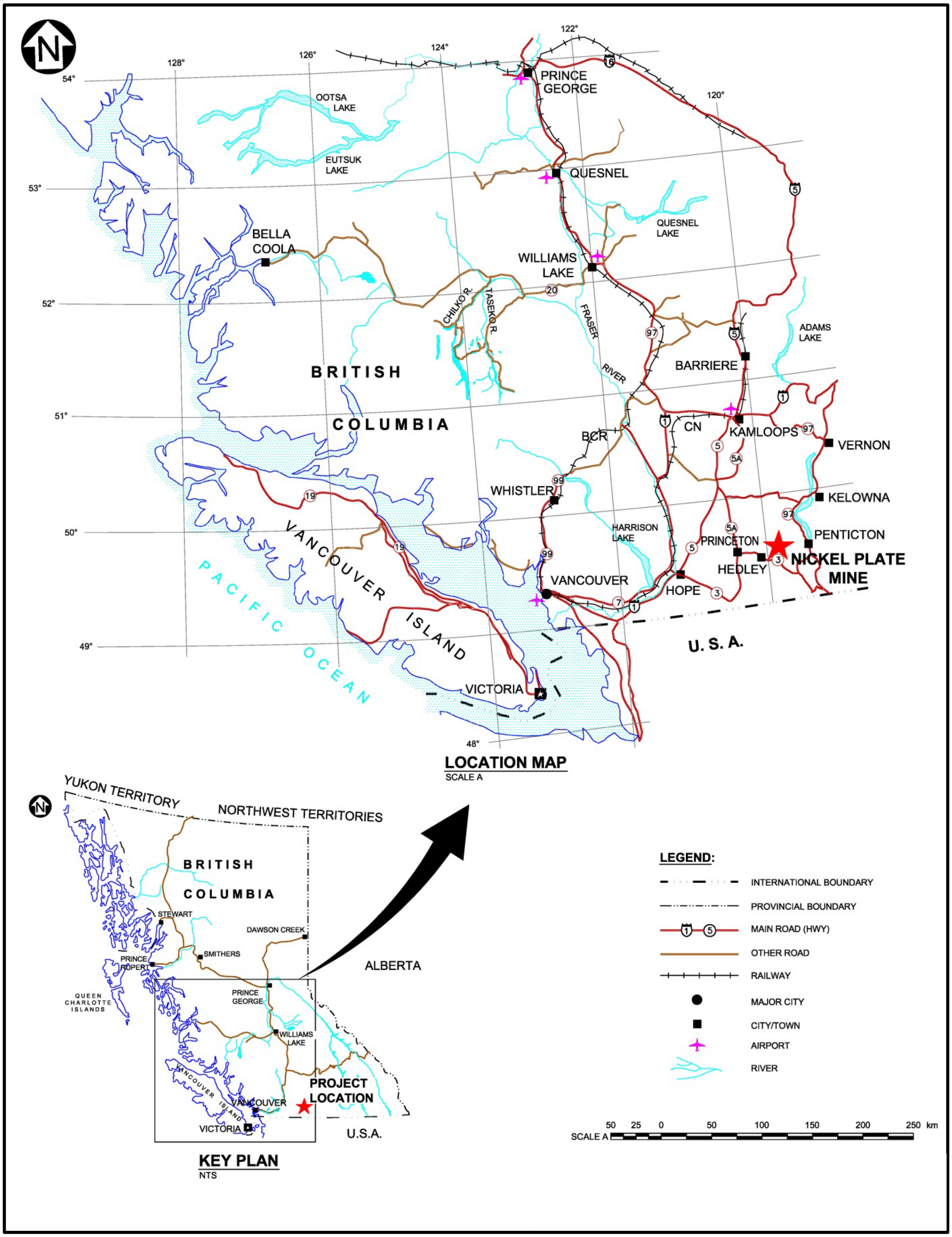


Figure 1.1 Location Plan

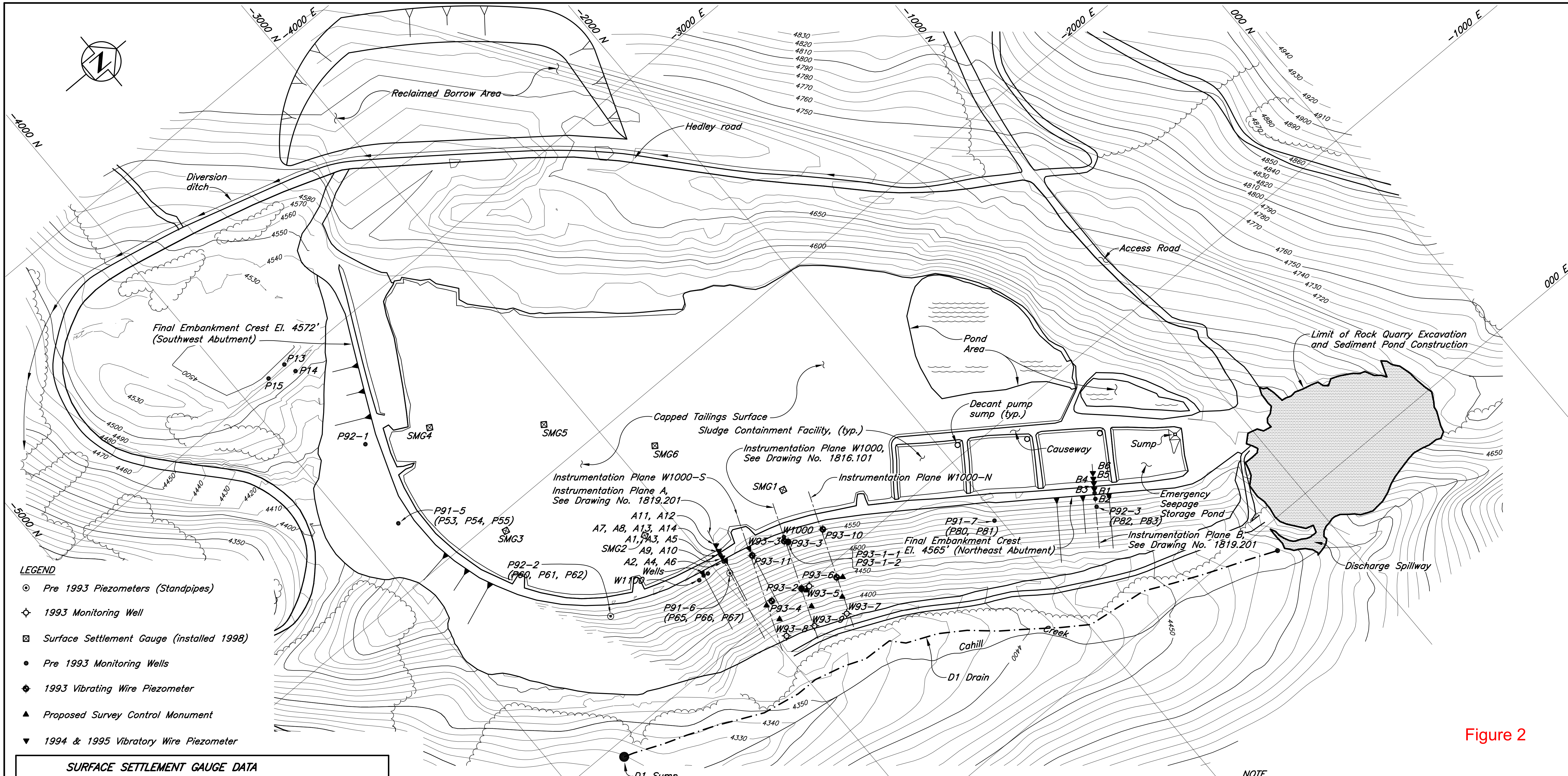


Figure 2

NOTE

1. Topography provided from Aerial survey flown in may 1992 by Orthoshop combined with as-built survey data for 1992 and 1993 construction by Ledcor and Nickel Plate Mine.

Scale 200 100 0 200 400 600 800 1000 Ft.

SURFACE SETTLEMENT GAUGE DATA

POINT	CO-ORDINATES EAST	CO-ORDINATES NORTH	*INITIAL ELEVATION	**CURRENT ELEVATION
SMG1	−1351.510	−2587.740	4567.520	4566.74
SMG2	−1567.430	−3127.380	4568.605	4567.71
SMG3	−1938.190	−3540.320	4567.830	4566.98
SMG4	−2449.560	−3508.310	4567.970	4567.58
SMG5	−2165.450	−3151.000	4566.280	4565.70
SMG6	−1815.640	−2866.230	4566.515	4565.74

NOTE: *Surveyed by Nickel Plate Mine December 15, 1998
**Surveyed by Nickel Plate Mine December 29, 2008

REFERENCE DRAWINGS

DRG. NO.	DESCRIPTION
1819.201	INSTRUMENTATION PLANES A AND B
1816.101	INSTRUMENTATION AND GEOLOGICAL SECTIONS

REVISIONS

REV.	DATE	DESCRIPTION	APPROVED
14	MAR. 14/11	POND 1 SUMP LOCATION UPDATED	
13	FEB 02/09	SETTLEMENT DATA UPDATED	
12	MAR 03/05	ISSUED FOR ANNUAL REPORT	
11	MAR 02/04	ISSUED FOR ANNUAL REPORT, TITLE BLOCK CHANGE	
10	APR 1/99	NEW SURFACE SETTLEMENT GAUGES ADDED	
9	MAY 13/98	PIEZOMETER NAME CORRECTED	

REVISIONS

REV.	DATE	DESCRIPTION	APPROVED
8	FEB 10/98	NAMES OF PIEZOMETER PLANES UPDATED	
7	AUG 28/96	PIEZOMETER NAMES CLARIFIED	
6	JAN. 8/96	AS CONSTRUCTED	
5	MAY 30/95	STAGE VII FINAL DESIGN	
4	AUG. 31/94	AS CONSTRUCTED	
3	MAY 12/94	STAGE VI FINAL DESIGN	
2	FEB. 5/94	AS CONSTRUCTED	
1	JAN. 5/94	INSTRUMENTATION ADDED	
0	NOV. 5/93	AS CONSTRUCTED	

KNIGHT PIESOLD LIMITED
CONSULTING ENGINEERS – VANCOUVER, B.C.

DESIGNED TFK
DRAWN BMC/WAL/NSD
CHECKED
APPROVED

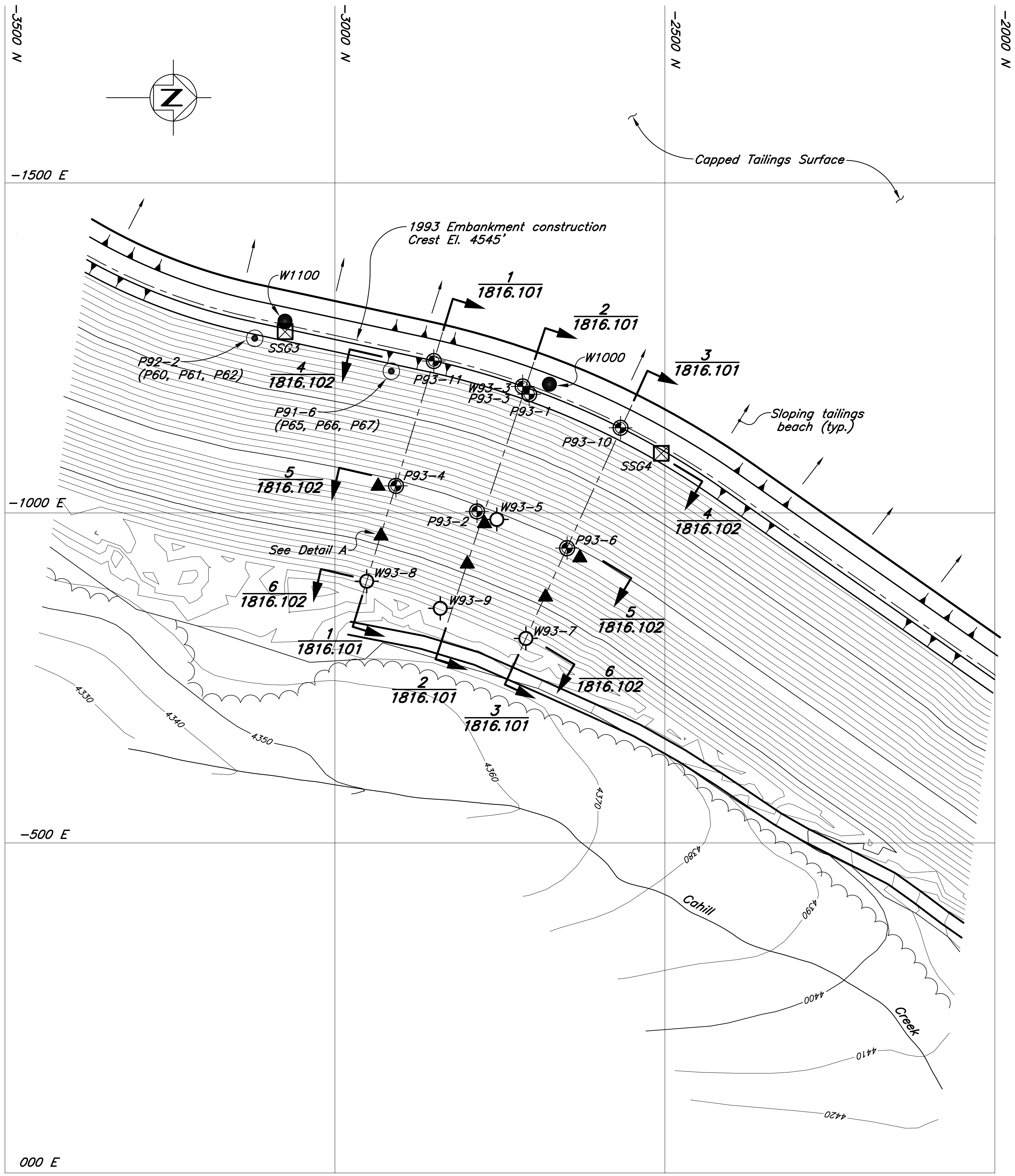
BARRICK GOLD INC.
(FORMERLY HOMESTAKE CANADA INC.)

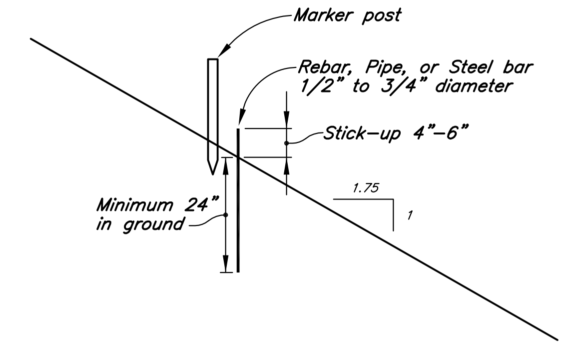
NICKEL PLATE MINE

INSTRUMENTATION PLAN

DATE NOV. 8, 1993 | SCALE AS SHOWN | DRG. NO. 1812.101 | REV. 14

SAVED: M:\1\01\00003\17\A\Acad\DWGS\1812\1812_101_r14 (D09), 3/21/2013 10:15:18 AM , TMACGOWAN PRINTED: 3/21/2013 10:28:51 AM, Layout1, TMACGOWAN
XREF FILE(S): IMAGE FILE(S):





DETAIL A
PROPOSED SURVEY CONTROL MONUMENT
(6 REQUIRED)
NTS

Piezometer Designation	Tip Elevation	Co-ordinate North	Co-ordinate East
INSTRUMENTATION PLANE W1000-S			
P93-4-1	4354.2	-2906.46	-1045.36
P93-4-2	4398.8	-2906.46	-1045.36
W93-8	4287.9	-2951.88	-896.46
P93-11-1	4416.0	-2976.10	-1250.04
P93-11-2	4441.7	-2976.10	-1250.04
INSTRUMENTATION PLANE W1000			
P93-1-1	4475.5	-2704.60	-1180.70
P93-1-2	4407.5	-2704.60	-1180.70
P93-2	4315.5	-2784.40	-1002.90
P93-3-1	4390.7	-2715.53	-1188.71
P93-3-2	4421.4	-2715.53	-1188.71
W93-3	4496.5	-2715.53	-1188.71
W93-5-1	4325.3	-2752.80	-994.50
W93-5-2	4354.0	-2752.50	-994.36
W93-9	4331.3	-2840.33	-855.48
INSTRUMENTATION PLANE W1000-N			
P93-6-1	4355.1	-2641.65	-950.16
P93-6-2	4398.0	-2641.65	-950.16
W93-7	4298.7	-2710.64	-809.79
P93-10-1	4409.8	-2567.30	-1126.63
P93-10-2	4420.7	-2567.30	-1126.63

LEGEND
- Pre 1993 Piezometers (Standpipes)
- 1993 Monitoring Well
- Surface Settlement Gauge
- Pre 1993 Monitoring Wells
- 1993 Vibrating Wire Piezometer
- Proposed Survey Control Monument

NOTES:
1. Drill holes designated with a "P" signify drill holes where vibrating wire piezometers were installed.
2. Drill holes designated with a "W" signify drill holes where monitoring wells were installed.
3. Section 1 corresponds to Instrumentation Plane W1000-S
   Section 2 corresponds to Instrumentation Plane W1000
   Section 3 corresponds to Instrumentation Plane W1000-N

Figure 3

Scale 100 50 0 100 200 300 400 500 Feet

DRG. NO.	DESCRIPTION
REFERENCE DRAWINGS	

REV.	DATE	DESCRIPTION	APPROVED
7	FEB 06/09	ISSUED FOR REPORT	
REVISIONS			

REV.	DATE	DESCRIPTION	APPROVED
6	MAR 30/07	DRAWING TITLE REVISED	
5	MAR 03/06	TAILINGS SURFACE NOTE REVISED	
4	MAR 02/04	TITLE BLOCK CHANGED	
3	MAY 05/98	POND ELEVATION UPDATED	
2	MAY 16/97	POND ELEVATION UPDATED	
1	AUG 28/96	PIEZOMETER NAMES CLARIFIED	
0	JAN. 20/94	ISSUED FOR REPORT	
REVISIONS			

KNIGHT PIESOLD LIMITED
CONSULTING ENGINEERS – VANCOUVER, B.C.

DESIGNED BB
DRAWN WAL
CHECKED
APPROVED

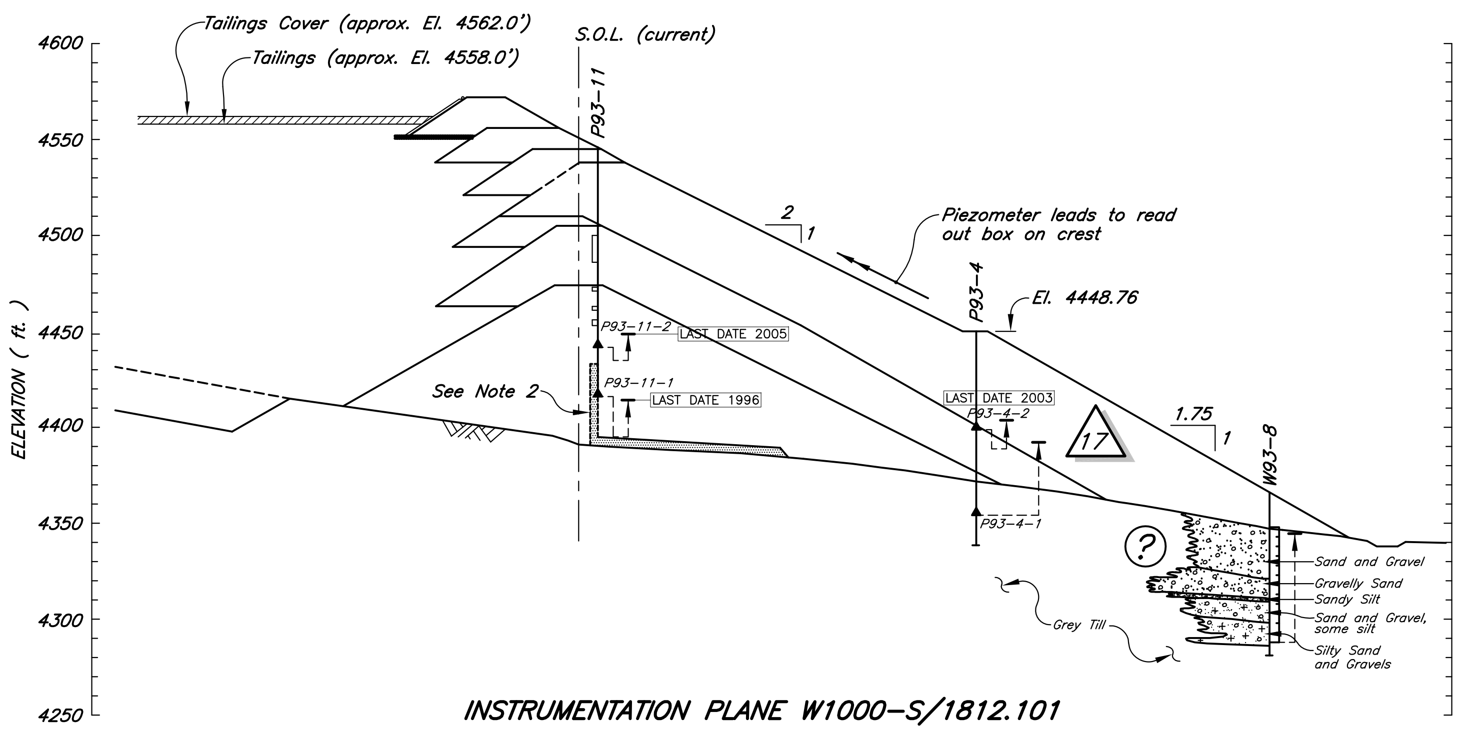
BARRICK GOLD INC.
(FORMERLY HOMESTAKE CANADA INC.)

NICKEL PLATE MINE

INSTRUMENTATION PLAN
PLANES W1000, W1000-S AND W1000-N

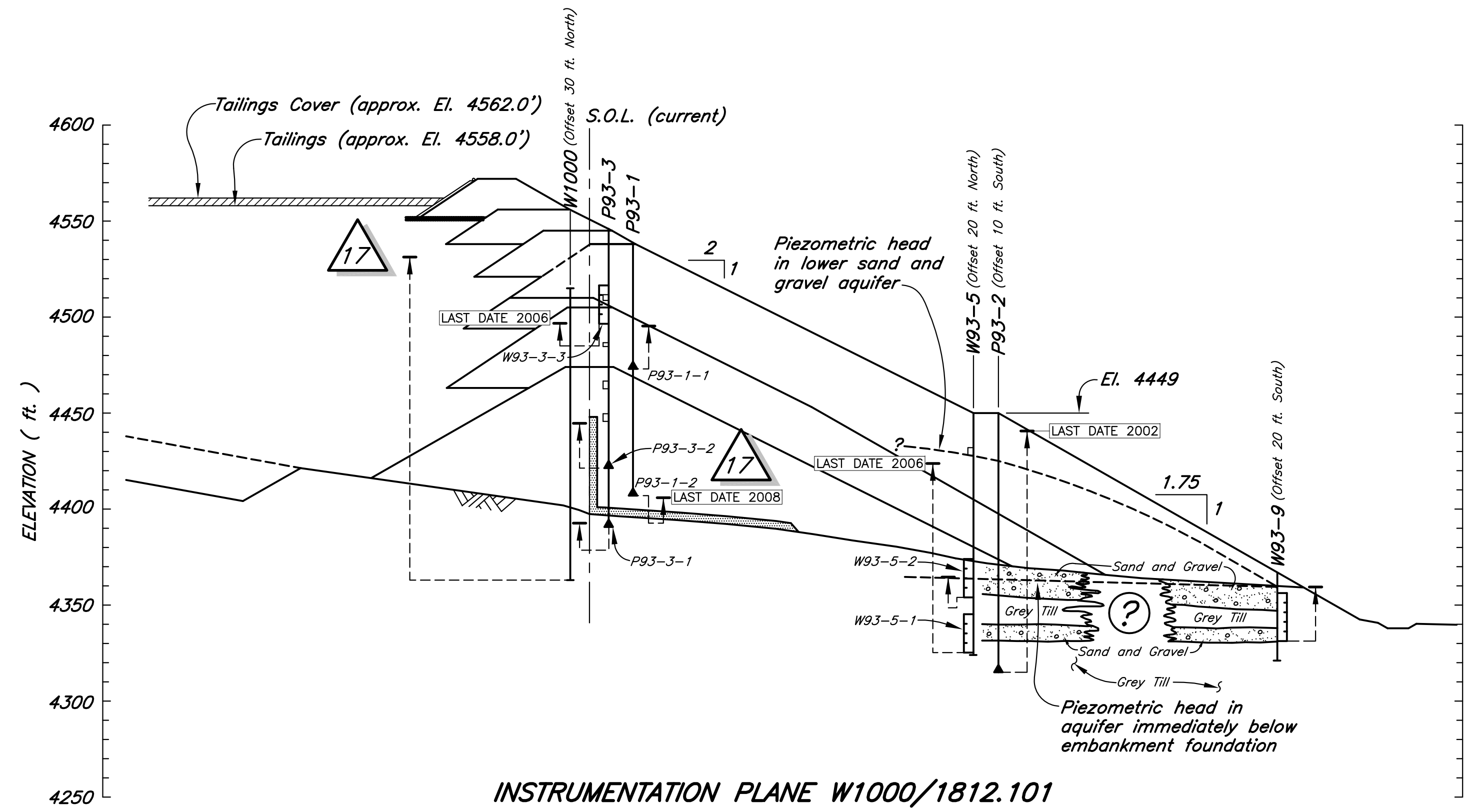
DATE JAN. 20, 1994 | SCALE AS SHOWN | DRG. NO. 1816.100 | REV. 7

SAVED: M:\1\01\00003\17\A\Acad\DWGS\1816\1816_100_r7 (D02), 3/21/2013 10:20:01 AM , TMACGOWAN PRINTED: 3/21/2013 10:28:05 AM, Model, TMACGOWAN
XREF FILE(S): IMAGE FILE(S):



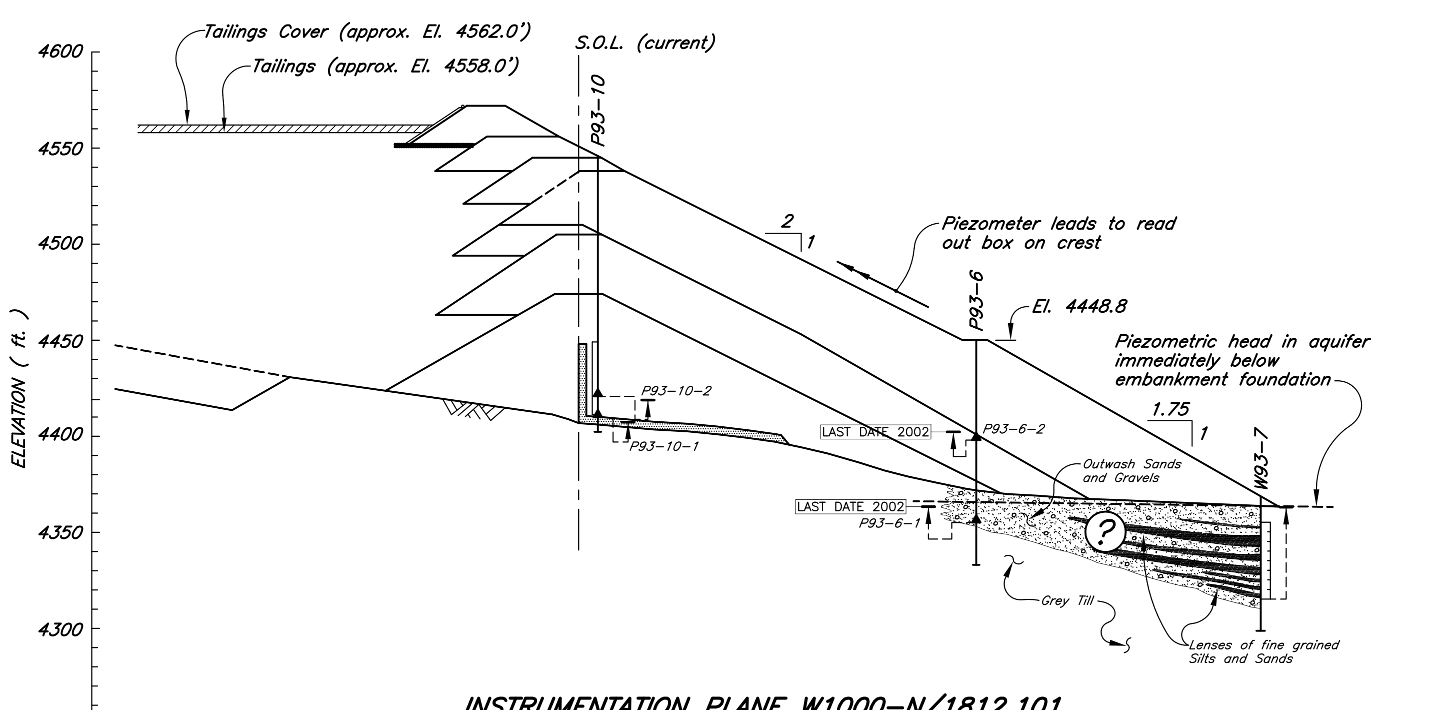
INSTRUMENTATION PLANE W1000-S/1812.101

Scale A



INSTRUMENTATION PLANE W1000/1812.101

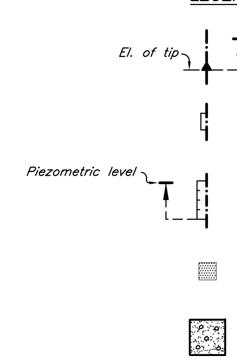
Scale A



INSTRUMENTATION PLANE W1000-N/1812.101

Scale A

LEGEND



- Vibrating wire piezometer
- Zones of wet till
- Length of well screen for monitoring well
- Drainage blanket/Chimney drain
- Aquifers, water producing Sand and Gravel deposits

NOTES

1. Geologic interpretation is based on limited information available from drill hole logs.
2. Chimney drain intersected down stream of location indicated in as built drawings.
3. Piezometer levels as of January 2007.
4. Supernatant pond El. 4549.6' as of December 30, 2000.

Figure 4

Scale A 50 0 50 100 150 200 Feet

DRG. NO.	DESCRIPTION
1812.101	INSTRUMENTATION PLAN

REFERENCE DRAWINGS

REV.	DATE	DESCRIPTION	APPROVED
17	MAR 18/13	PIEZOMETER LEVELS UPDATED, DATE ADDED	
16	FEB 06/09	PIEZOMETER LEVELS UPDATED, DATE ADDED	
15	MAR 11/08	PIEZOMETER LEVELS UPDATED, DATE ADDED	
14	MAR 01/07	PIEZOMETER LEVELS UPDATED, DATE ADDED	
13	MAR 03/06	PIEZO DATES ADDED, HATCHING REMOVED	
12	FEB 11/05	PIEZOMETER LEVELS UPDATED	
11	MAR 02/04	PIEZOMETER LEVELS UPDATED, TITLE BLOCK CHANGED	
10	JAN 16/02	PIEZOMETER LEVELS UPDATED	

REVISIONS

REV.	DATE	DESCRIPTION	APPROVED
9	MAR 01/01	PIEZOMETER LEVELS UPDATED	
8	FEB 18/00	PIEZOMETER LEVELS UPDATED	
7	APR 1 /99	POND LEVEL UPDATED	
6	MAR 12/99	PIEZOMETER LEVELS UPDATED	
5	MAY 5/98	PIEZOMETER LEVELS UPDATED	
4	FEB 10/98	PIEZOMETER LEVELS UPDATED	
3	MAY 16/97	PIEZOMETER LEVELS UPDATED	
2	AUG 28/96	PIEZOMETER LEVELS UPDATED	
1	OCT. 2/95	EMBANKMENT CREST AND PIEZOMETER LEVELS UPDATED	
0	JAN. 20/94	ISSUED FOR REPORT	

REVISIONS

KNIGHT PIESOLD LIMITED
CONSULTING ENGINEERS – VANCOUVER, B.C.

DESIGNED BB
DRAWN WAL
CHECKED
APPROVED

BARRICK GOLD INC.
(FORMERLY HOMESTAKE CANADA INC.)

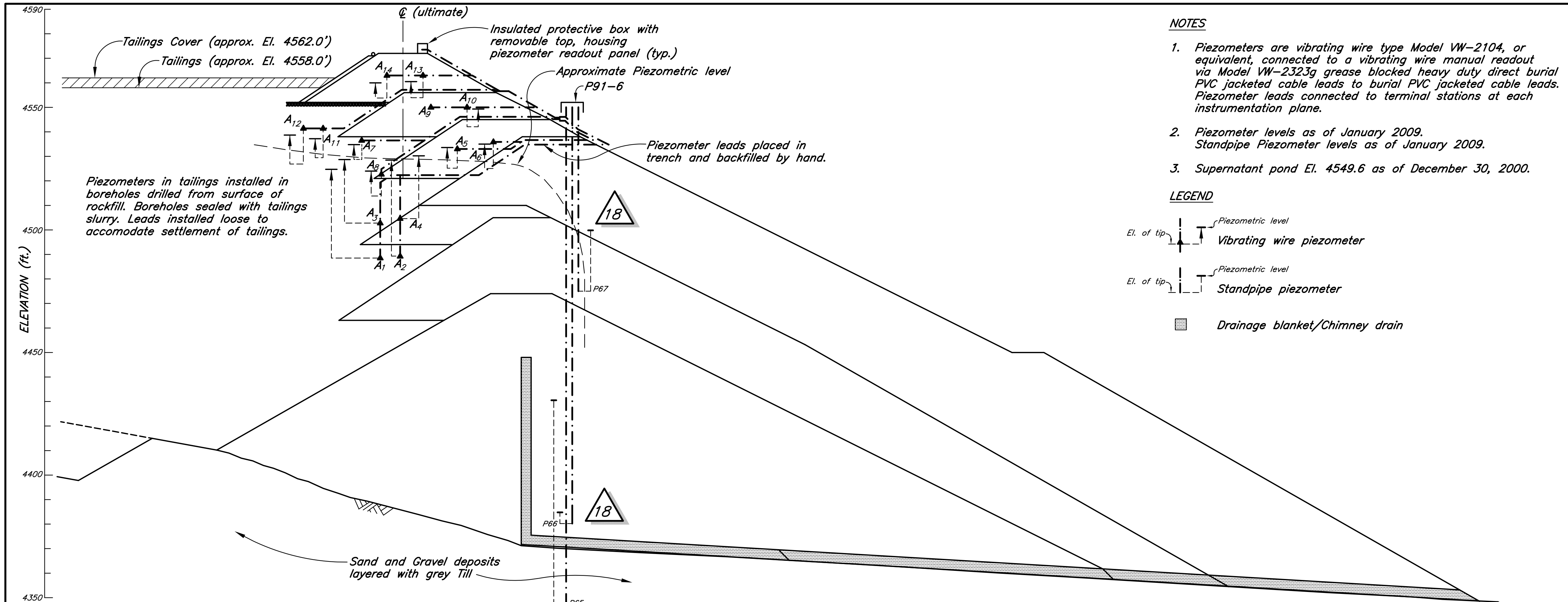
NICKEL PLATE MINE

INSTRUMENTATION AND GEOLOGICAL SECTIONS

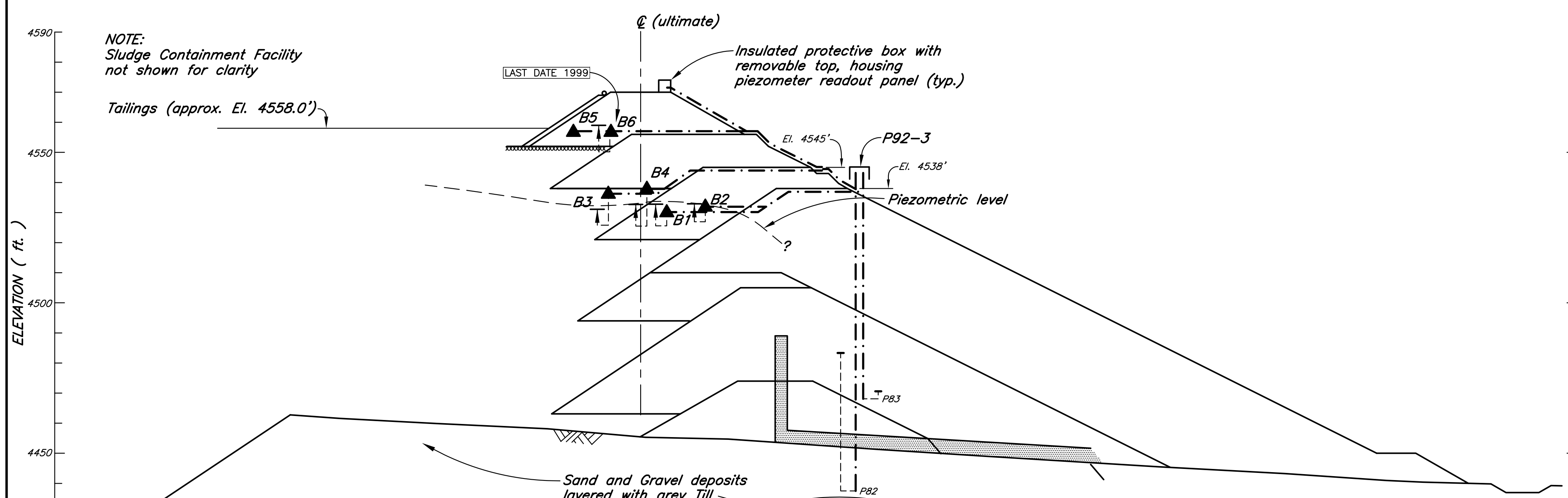
DATE JAN. 20, 1994 | SCALE AS SHOWN | DRG. NO. 1816.101 | REV. 17

CAD FILE: M:\1\01\00003\13\A\Acad\Dwgs\1816\1816_101_r16 (D01).dwg 1"=50' PLOT 1=50.0 FEB 06 2009

SAVED: M:\1\01\00003\17\A\Acad\DWGS\1816\1816_101_r17 (D01), 3/21/2013 10:21:53 AM, TMACGOWAN PRINTED: 3/21/2013 10:26:51 AM, Model, TMACGOWAN
XREF FILE(S): IMAGE FILE(S):



EMBANKMENT SECTION THROUGH PLANE A/1812.101



EMBANKMENT SECTION THROUGH PLANE B/1812.101

NOTES

1. Piezometers are vibrating wire type Model VW-2104, or equivalent, connected to a vibrating wire manual readout via Model VW-2323g grease blocked heavy duty direct burial PVC jacketed cable leads to burial PVC jacketed cable leads. Piezometer leads connected to terminal stations at each instrumentation plane.
2. Piezometer levels as of January 2009. Standpipe Piezometer levels as of January 2009.
3. Supernatant pond El. 4549.6 as of December 30, 2000.

LEGEND

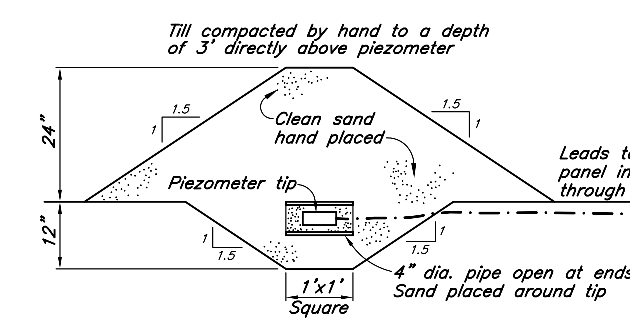
El. of tip — Piezometric level — Vibrating wire piezometer

El. of tip — Piezometric level — Standpipe piezometer

Drainage blanket/Chimney drain

INSTRUMENTATION PLANE A			
Piezometer No.	Tip Elevation	Co-ordinate North	Co-ordinate East
A1	4488.50	-2945.98	-1313.36
A2	4498.30	-2947.00	-1305.00
A3	4502.80	-2945.98	-1313.36
A4	4504.60	-2947.00	-1305.00
A5	4533.00	-2956.28	-1288.96
A6	4535.89	-2947.34	-1280.89
A7	4536.50	-2951.73	-1299.97
A8	4522.65	-2949.25	-1341.66
A9	4550.39	-2965.95	-1297.98
A10	4550.10	-2963.20	-1286.24
A11	4549.94	-2964.80	-1328.50
A12	4549.98	-2962.32	-1335.74
A13	4560.10	-2961.10	-1300.80
A14	4559.70	-2958.20	-1310.10
INSTRUMENTATION PLANE B			
B1	4530.17	-1643.33	-524.12
B2	4531.95	-1655.56	-522.28
B3	4536.24	-1643.33	-568.41
B4	4537.88	-1644.47	-553.47
B5	4558.27	-1662.01	-589.01
B6	4558.42	-1662.20	-580.01
P82	4437.50	-1672.20	-495.16
P83	4468.10	-1672.20	-495.16
INSTRUMENTATION PLANE W1000*			
P93-1-1	4475.50	-2704.63	-1180.71
P93-1-2	4407.50	-2704.63	-1180.71
P93-2	4315.50	-2784.37	-1002.85

* Co-ordinates from Ledcor survey October 1993



DETAIL B
TYPICAL VIBRATING WIRE INSTALLATION IN FILL
NTS

Figure 5

Scale 20 10 0 20 40 60 80 100 ft.

DRG. NO.	DESCRIPTION
1812.101	INSTRUMENTATION PLAN

REFERENCE DRAWINGS

REV.	DATE	DESCRIPTION	APPROVED
18	MAR 18/13	PIEZO LEVELS UPDATED	
17	FEB 16/12	PIEZO LEVELS UPDATED	
16	FEB 09/09	PIEZO LEVELS UPDATED	
15	MAR 11/08	PIEZO LEVELS UPDATED	
14	MAR 01/07	PIEZO LEVELS UPDATED	
13	MAR 03/06	PIEZO ELEV. REVISED, HATCHING REMOVED	
12	FEB 28/05	PIEZOMETER LEVELS UPDATED	
11	FEB 24/04	PIEZOMETER LEVELS UPDATED, TITLE BLOCK CHANGED	

REVISIONS

REV.	DATE	DESCRIPTION	APPROVED
10	JAN 16/02	PIEZOMETER LEVELS UPDATED	
9	MAR 01/01	PIEZOMETER LEVELS UPDATED	
8	FEB 18/00	PIEZOMETER LEVELS UPDATED	
7	APR 1/99	POND LEVEL UPDATED	
6	MAR 12/99	PIEZOMETER LEVELS UPDATED	
5	MAY 5/98	PIEZOMETER LEVELS UPDATED	
4	FEB 10/98	PIEZOMETER LEVELS UPDATED	
3	MAY 16/97	PIEZOMETER LEVELS UPDATED	
2	AUG 28/96	PIEZOMETER LEVELS UPDATED	
1	JAN. 8/96	AS CONSTRUCTED	
0	OCT. 2/95	ISSUED FOR REPORT	

REVISIONS

KNIGHT PIESOLD LIMITED
CONSULTING ENGINEERS - VANCOUVER, B.C.

DESIGNED SMS
DRAWN WAL
CHECKED
APPROVED

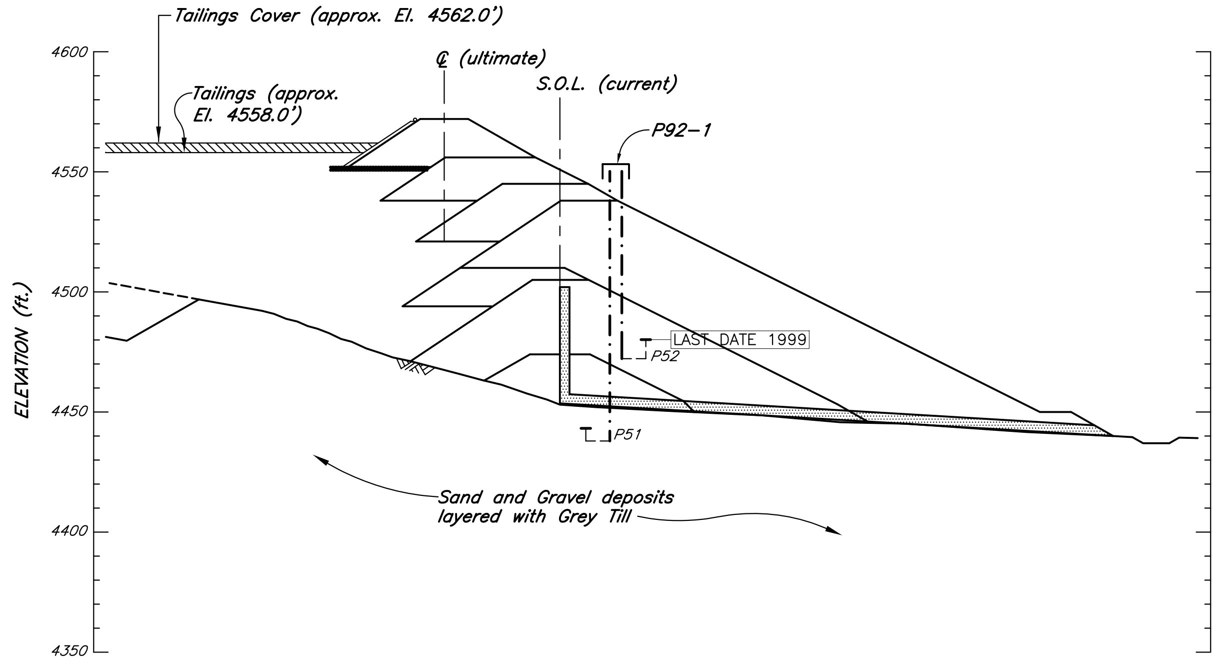
BARRICK GOLD INC.
(FORMERLY HOMESTAKE CANADA INC.)

NICKEL PLATE MINE

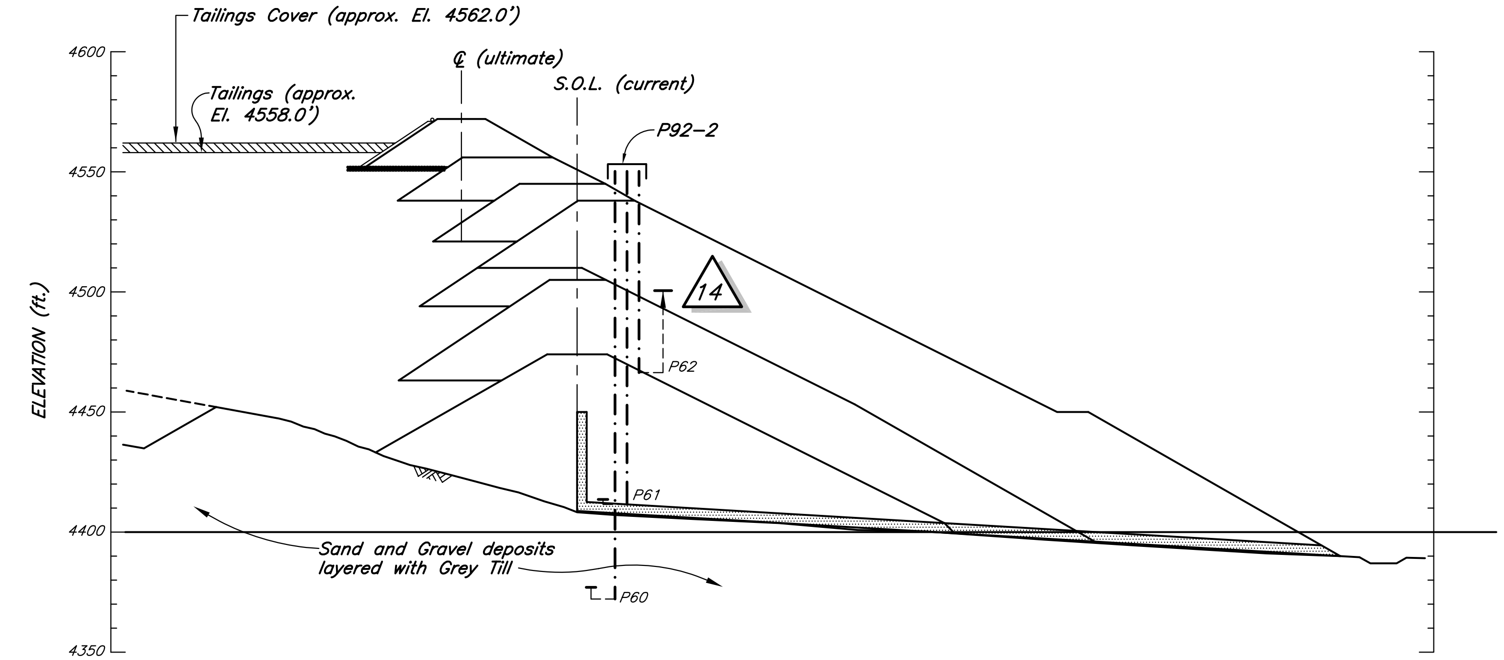
INSTRUMENTATION PLANES A & B

DATE OCT. 2, 1995 | SCALE AS SHOWN | DRG. NO. 1819.201 | REV. 18

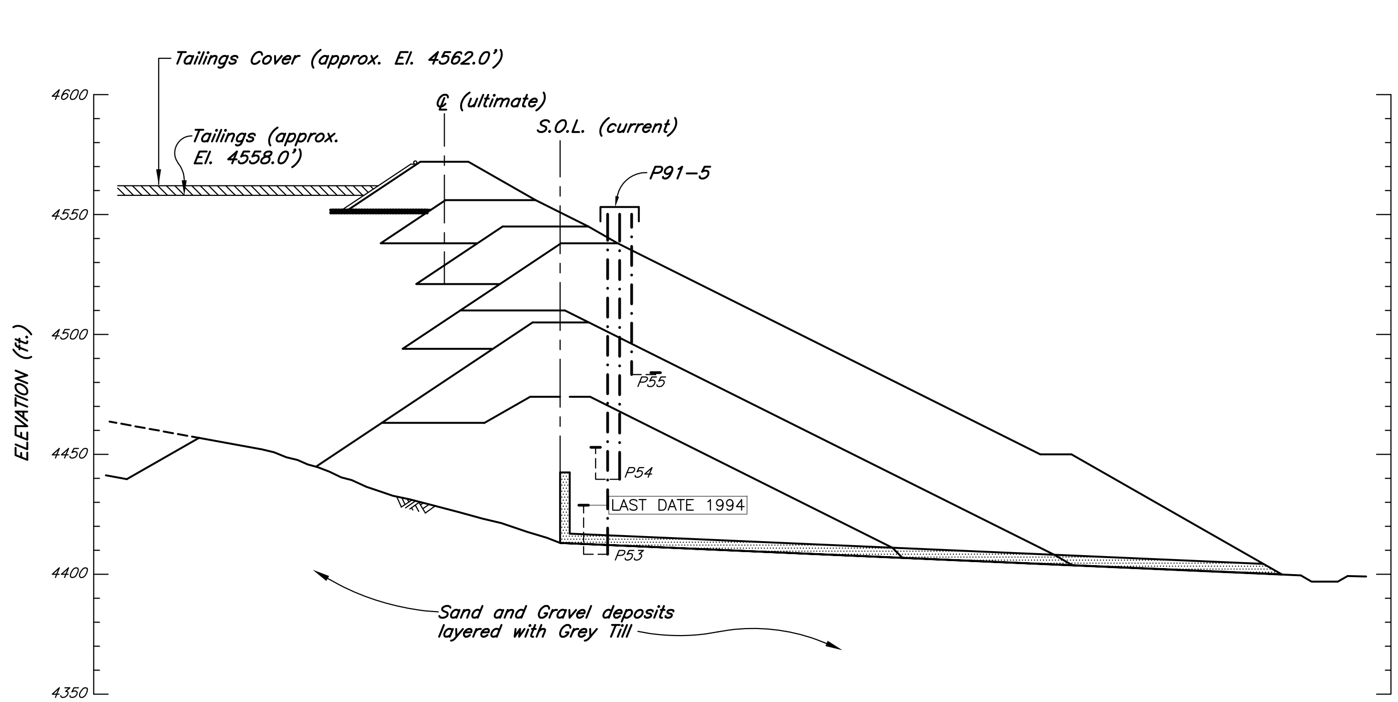
SAVED: M:\1\01\00003\17\A\Acad\DWGS\1819\1819_201_r18 (D01), 3/18/2013 10:08:32 AM , TMACGOWAN PRINTED: 3/21/2013 10:23:23 AM, Model, TMACGOWAN
XREF FILE(S): IMAGE FILE(S):



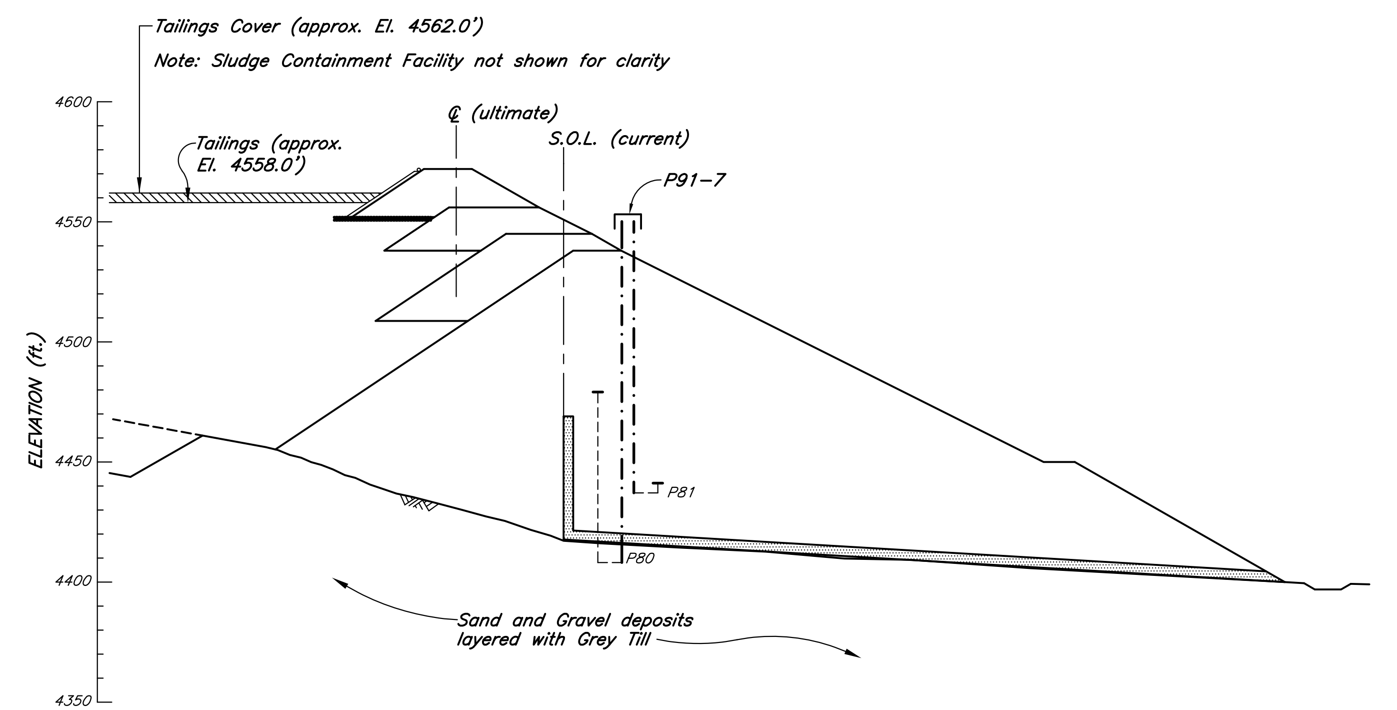
EMBANKMENT SECTION THROUGH STANDPIPE PIEZOMETERS P51, P52 AT LOCATION P92–1



EMBANKMENT SECTION THROUGH STANDPIPE PIEZOMETERS P60, P61, P62 AT LOCATION P92–2



EMBANKMENT SECTION THROUGH STANDPIPE PIEZOMETERS P53, P54, P55 AT LOCATION P91–5



EMBANKMENT SECTION THROUGH STANDPIPE PIEZOMETERS P80, P81 AT LOCATION P91–7

Figure 6

LEGEND

El. of tip — Piezometric level — Standpipe piezometer

Drainage blanket/Chimney drain

NOTE

1. Piezometer levels as of January 2009

Scale 40 20 0 40 80 120 160 200 Feet

DRG. NO.	DESCRIPTION
REFERENCE DRAWINGS	

REV.	DATE	DESCRIPTION	APPROVED
14	MAR 18/13	PIEZOMETER LEVEL UPDATED	
13	FEB 09/09	PIEZOMETER LEVELS UPDATED	
12	MAR 11/08	PIEZOMETER LEVELS UPDATED	
11	MAR 01/07	PIEZOMETER LEVELS UPDATED	
10	MAR 03/06	PIEZO DATES ADDED, HATCHING REMOVED	
9	FEB 11/05	PIEZOMETER LEVELS UPDATED	
8	MAR 02/04	PIEZOMETER LEVELS UPDATED, TITLE BLOCK CHANGED	

REVISIONS

REV.	DATE	DESCRIPTION	APPROVED
7	JAN 16/02	PIEZOMETER LEVELS UPDATED	
6	MAR 01/01	PIEZOMETER LEVELS UPDATED	
5	FEB 18/00	PIEZOMETER LEVELS UPDATED	
4	MAR 12/99	PIEZOMETER LEVELS UPDATED	
3	MAY 5/98	PIEZOMETER LEVELS UPDATED	
2	MAY 16/97	PIEZOMETER LEVELS UPDATED	
1	AUG 28/96	PIEZOMETER LEVELS UPDATED	
0	OCT. 2/95	ISSUED FOR REPORT	

REVISIONS

KNIGHT PIESOLD LIMITED
CONSULTING ENGINEERS – VANCOUVER, B.C.

DESIGNED SMS
DRAWN TAM
CHECKED
APPROVED

BARRICK GOLD INC.
(FORMERLY HOMESTAKE CANADA INC.)

NICKEL PLATE MINE

PIEZOMETER PLANES

DATE OCT. 2, 1995 | SCALE AS SHOWN | DRG. NO. 1819.202 | REV. 14

SAVED: M:\1\01\00003\17\A\Acad\DWGS\1819\1819_202_r13 (D02). 3/18/2013 10:32:03 AM , TMACGOWAN PRINTED: 3/21/2013 10:25:46 AM, Model, TMACGOWAN
XREF FILE(S): IMAGE FILE(S):

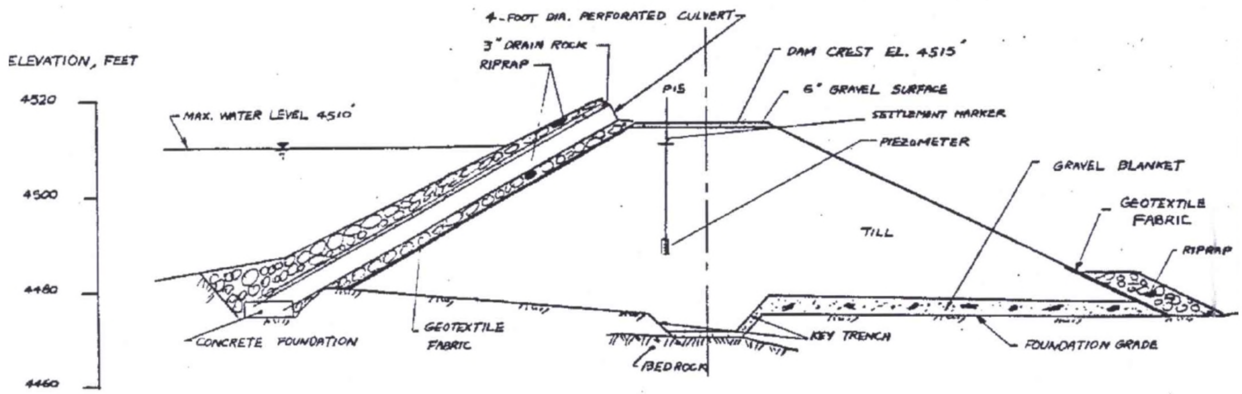


Figure 7

LEGEND	NOTES	CLIENT	Nickel Plate Mine Tailings Storage Facility Mascot Pond Dam Engineering Assessment 2013
	ADAPTED FROM PLATE 6 (ROBINSON DAMES & MOORE, 1987)	BARRICK	**WATER STORAGE DAM TYPICAL CROSS SECTION**
	STATUS ISSUED FOR USE	eba A TETRA TECH COMPANY	PROJECT NO. K13103111-01; DWN KK; CKD LM; APVD MJL; REV 0; OFFICE KELOWNA; DATE August 22, 2013; **Figure 2.1e**