<table>
<thead>
<tr>
<th>SYSTEM</th>
<th>EPOCH</th>
<th>FORMATION</th>
<th>LITHOLOGY</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>SOIL AND WEATHERED ZONE</td>
<td>Undifferentiated Sandstones and Shales (Fowler Sands). 0-350 feet in thickness.</td>
</tr>
<tr>
<td>EOCENE</td>
<td>WASATCH</td>
<td></td>
<td>Sandstone: grain size varies from medium-grained sand to gravel, most commonly medium to very coarse-grained sand; beds vary from loose friable sand to well-cemented (carbonate) sandstones. (Does not contain uranium mineralization).</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Siltstone and Claystone (shale): Color varies from olive orange to gray green; may contain thin interbedded sandstones and lignite beds.</td>
<td></td>
</tr>
<tr>
<td>TERTIARY</td>
<td>PALEOCENE</td>
<td>FORT UNION</td>
<td>Tailings Dam Sandstone (TDSS): Sandstone description same as Wasatch Sandstone (Does not contain uranium mineralization in Highland area). 30-50 feet in thickness.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Tailings Dam Shale (TDSH): generally gray green with thin beds of sandstone. 20-50 feet in thickness.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>50-Sand (50SS- Upper Ore Body Sandstone): Sandstone description same as Wasatch Sandstone (Ore bearing unit in Highland area). 20-50 feet in thickness.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>45-Shale Siltstone and Claystone (45SH): generally gray green. 9-35 feet in thickness.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>40-Sand (40SS- Middle Ore Body Sandstone): Sandstone description same as Wasatch Sandstone (Major ore bearing unit in Highland area). 20-50 feet in thickness.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>35-Shale Siltstone and Claystone (35SH) (shale): generally gray green; may contain thinbedded sandstone units). 9-35 feet in thickness.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Siltstone and Claystone (shale): same as above. Variable thickness.</td>
<td></td>
</tr>
</tbody>
</table>
A’ -- TAILINGS

WASTE ROCK

BACKFILL

TAILINGS

TAILINGS DAM

TAILINGS DAM SANDSTONE

TAILINGS DAM SHALE

INDIFFERENTIATED FORT UNION AND WASATCH FORMATIONS

DISTANCE ALONG CROSS SECTION (FEET)

5300
5250
5200
5150
5100
5050
5000
4950
4900

2,000
4,000
6,000
8,000
10,000

CURRENT CONDITIONS

EARTH AND ENVIRONMENTAL
SEEPAGE FROM TAILINGS POND DIRECTLY INTO TAILINGS DAM SANDSTONE

TAILINGS DAM

FLOW FROM TAILINGS POND INTO PIT

DISTANCE ALONG CROSS SECTION (FEET)
PREVIOUS DRAINAGE INTO BACKFILL
WELL 180 DRY AFTER 1994

FLOW FROM TAILINGS
INTO PIT/BACKFILL

SEEPAGE FROM TAILINGS INTO
TAILINGS DAM SANDSTONE

UNDIFFERENTIATED FORT UNION
AND WASATCH FORMATIONS

TAILINGS DAM SANDSTONE
TAILINGS DAM SHALE
50 SANDSTONE
45 SHALE
40 SANDSTONE
35 SHALE
30 SANDSTONE
25 SHALE

EARTH AND ENVIRONMENTAL

CLIENT
PROJECT
HIGHLAND URANIUM PROJECT
ACL AMENDMENT APPLICATION
TITLE
PRIMARY FLOW PATH ALONG
CROSS SECTION B′ - B′
DURING ACTIVE MINING, 1972-1984

DRAWN BY
JCM
CHECKED BY
BW
DATE
4/28/11

FILENAMER 677520022

amec EARTH AND ENVIRONMENTAL

1-17
LEGEND

- **WELLS SCREENED IN THE TDSS**
- **GROUNDWATER ELEVATION CONTOURS (FT ABOVE MEAN SEA LEVEL)**
- **EXTENT OF MINING**
- **EXTENT OF TAILINGS**
- **TAILINGS DAM**
- **CREEK**

**EXONMOBIL**

**HIGHLAND URANIUM PROJECT**

**ACL AMENDMENT APPLICATION**

**APRIL 1982 TDSS POTENTIOMETRIC SURFACE MAP**

HYDROGRAPHS SHOWING LONG-TERM GROUNDWATER LEVEL DECREASES IN TDSS WELLS
LEGEND

- WELLS SCREENED IN THE TDSS
- GROUNDWATER ELEVATION CONTOURS (FT ABOVE MEAN SEA LEVEL)
- EXTENT OF MINING
- EXTENT OF TAILINGS
- TAILINGS DAM
- TDSS OUTCROP WITHIN PIT AND TAILINGS IMPOUNDMENT

CREEK

10 FT ELEVATION CONTOURS

TDSS OUTCROP

LEGEND

- WELLS SCREENED IN THE TDSS
- GROUNDWATER ELEVATION CONTOURS (FT ABOVE MEAN SEA LEVEL)
- EXTENT OF MINING
- EXTENT OF TAILINGS
- TAILINGS DAM
- TDSS OUTCROP WITHIN PIT AND TAILINGS IMPOUNDMENT

- CREEK
- 10 FT ELEVATION CONTOURS
- TDSS OUTCROP

CLIENT: ExxonMobil
PROJECT: HIGHLAND URANIUM PROJECT
ACL AMENDMENT APPLICATION
TITLE: AUGUST 2010 TDSS POTENTIOMETRIC SURFACE MAP

DRAWN BY: KZ
CHECKED BY: BW
FILENAME: 677520022
DATE: 4/26/11
FIGURE NO.: 1-23
HIGHLAND URANIUM PROJECT
ACL AMENDMENT APPLICATION

HYDROGRAPHS SHOWING LONG-TERM GROUNDWATER LEVEL INCREASES & PIT LAKE WATER LEVEL

PROJECT No. 677520022 DATE 4/28/11
FIGURE No. 1-24
HYDROGRAPHS SHOWING INCREASING AND DECREASING GROUNDWATER AND SURFACE WATER LEVELS
PHOTO SHOWING SOUTHEAST DRAINAGE – VIEW TOWARD DAM
LEGEND

- WELLS SCREENED IN 50SS
- WELLS SCREENED IN REGOLITH
- WELLS SCREENED IN NORTH FORK BOX CREEK ALLUVIUM
- CREEK
- EXTENT OF MINING
- EXTENT OF TAILINGS
- SOUTH-EAST DRAINAGE AREA
- TAILINGS DAM
- 10 FT ELEVATION CONTOURS

TT-5
(5052.8)

WELL NUMBER
GROUNDWATER ELEVATION (FT ABOVE MEAN SEA LEVEL)

CLIENT
ExxonMobil

PROJECT
HIGHLAND URANIUM PROJECT
ACL AMENDMENT APPLICATION

TITLE
Q4 2009 GROUNDWATER LEVELS IN THE SOUTHEAST DRAINAGE

EARTH AND ENVIRONMENTAL

DRAWN BY
KMW
CHECKED BY
BW

FILENAME
6773022
DATE
4/28/11

FIGURE NO.
1-33
HIGHLAND URANIUM PROJECT
ACL AMENDMENT APPLICATION

BOX CREEK ALLUVIUM WELL HYDROGRAPHS
**Oxidizing Tailings Solution**
(Eh > 600 mV, neutral pH)

- UO$_2^{2+}$
- Cu$^{2+}$
- SeO$_4^{2-}$
- Zn$^{2+}$
- Fe$^{3+}$
- Al$^{3+}$

**Oxidizing Groundwater**
(Eh > 200 mV, neutral pH)

- SeO$_4^{2-}$
- H$_2$CO$_3$ + CaSO$_4$·2H$_2$O
- (pH ~ 7)

- CaCO$_3$ (calcite)

**Reducing Groundwater**
(Eh < 200 mV, neutral pH)

- SeO$_4^{2-}$
- UO$_2$(CO$_3$)$_2^{2-}$

**Bacteria + Organic Carbon**

- Pyrite (FeS$_2$)

- Se (am)
- UO$_2$(am)

**Immobile Solid Phases**
LEGEND

HYDRAULICALLY ISOLATED
WELLS SCREENED IN TDSS
WELLS SCREENED IN TDSS
WELLS SCREENED IN BACKFILL
EXTENT OF MINING
EXTENT OF TAILINGS
TAILINGS DAM
CREEK
10 FT ELEVATION CONTOURS

131 (9)
133 (60)
134 (18.4)
132 (6.5)
172 (8.5)
174 (5.3)
181 (71)
182 (12.4)
179 (173)
176 (239)
175 (288)
171 (39.5)
170 (63.4)
178 (260)
173 (100)
114 (445)
112 (116)

HIGHLAND PIT LAKE
PIT 3
BACKFILLED PIT 2
PIT 4
BACKFILLED PIT 1
TAILINGS IMPOUNDMENT

WELL NUMBER
134 (18.4)

CHLORIDE CONCENTRATION (MG/L)
134 (18.4)

CHLORIDE CONCENTRATIONS > 100 MG/L

CHLORIDE CONCENTRATIONS > 250 MG/L

PROJECT
HIGHLAND URANIUM PROJECT
ACL AMENDMENT APPLICATION

CLIENT
ExxonMobil

DATE 4/28/11
FILENAME 677520022

2009 & 2010 AVERAGE CHLORIDE ISOPLETHS

EARTH AND ENVIRONMENTAL
LEGEND

- WELLS SCREENED IN TDSS
- WELLS SCREENED IN BACKFILL
- HYDRAULICALLY ISOLATED WELLS SCREENED IN TDSS
- EXTENT OF MINING
- EXTENT OF TAILINGS
- TAILINGS DAM
- CREEK
- 10 FT ELEVATION CONTOURS

134 (596) WELL NUMBER

SULFATE CONCENTRATION (MG/L)

- SULFATE CONCENTRATIONS >3000 MG/L
- SULFATE CONCENTRATIONS >2000 MG/L
- SULFATE CONCENTRATIONS >1000 MG/L

CLIENT: ExxonMobil
PROJECT: HIGHLAND URANIUM PROJECT
ACL AMENDMENT APPLICATION
TITLE: 2009 & 2010 AVERAGE SULFATE ISOPLETHS

FILE: 877520022
DATE: 4/28/11

ZERO FEET

1,000 FEET

2,000 FEET
URANIUM TRENDS IN THE MFG-SERIES MONITORING WELLS
CONCENTRATIONS OF CHLORIDE AND SULFATE AT WELLS 117 AND 178
CONCENTRATION OF URANIUM IN WELLS 117, 177, AND 178
CONCENTRATIONS OF CHLORIDE AND SULFATE AT WELLS 175 AND 180
CONCENTRATION OF URANIUM IN WELLS 175 AND 180

Sample Date


Uranium Well 175 (mg/L)

0.000 0.005 0.010 0.015 0.020 0.025 0.030 0.035

Uranium Well 180 (mg/L)

0.00 0.20 0.40 0.60 0.80 1.00 1.20 1.40

FIGURE No. 2-10
DESORPTION MODELING RESULTS FOR SELENIUM

HIGHLAND URANIUM PROJECT
ACL AMENDMENT APPLICATION

PROJECT No. 677520022
DATE 4/28/11
FIGURE No. 2-12
Iron detection limit (0.052 mg/L)

Oxidizing

Unimpacted

Reducing

Transitional (mixing)

Uranium detection limit (0.0003 mg/L)
URANIUM TRENDS IN UPPER SOUTHEAST DRAINAGE REGOLITH AND OBSS MONITORING WELLS

HIGHLAND URANIUM PROJECT
ACL AMENDMENT APPLICATION

FIGURE No. 2-14
URANIUM TRENDS IN LOWER SOUTHEAST DRAINAGE REGOLITH
MONITORING WELLS

Date

Jan-06 Jan-07 Jan-08 Jan-09 Jan-10 Jan-11

Uranium (mg/L)

0.00 0.02 0.04 0.06 0.08 0.10

BBL-4 TT-4 TT-5 TT-6 TT-7 GPL

HIGHLAND URANIUM PROJECT
ACL AMENDMENT APPLICATION

URANIUM TRENDS IN LOWER SOUTHEAST DRAINAGE REGOLITH
MONITORING WELLS

FIGURE No. 2-15
The graph illustrates the relationship between the activity ratio of $^{234}$U/$^{238}$U and the reciprocal of the uranium concentration indicating mixing and dilution.

Key points:
- **Alluvial Mixing**: $R^2 = 0.70$
- **Dilution and/or Attenuation**
- **Points**:
  - TT-3, TT-5
  - BBL-4, TT-7
  - TT-8
  - BBL-3, BBL-2
  - MFG-1
  - TT-6
  - Pit Lake

**Axes**:
- **Y-axis**: Activity Ratio of $^{234}$U/$^{238}$U
- **X-axis**: $(1/U) \times 1000$ (ug/L)