

April 30, 2012

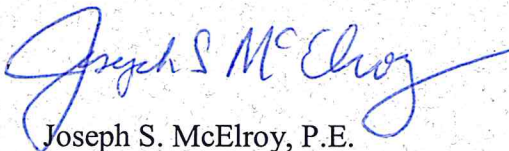
Tom Henderson  
Montana Department of Environmental Quality  
P.O. Box 200901  
Helena, MT 59620

**RE: 2011 Final Annual Construction Completion Report for the McLaren Tailings  
Abandoned Mine Site Reclamation Project**

Dear Tom,

Please find attached five copies of the 2011 Final Annual Construction Completion Report for the McLaren Tailings Abandoned Mine Site. If you have any questions or concerns, please do not hesitate to contact me.

Sincerely,



Joseph S. McElroy, P.E.  
Project Manager

cc: Marty Bennett, Pioneer Technical Services, Inc.  
Doug Richmond, Pioneer Technical Services, Inc.

---

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**FINAL  
CONSTRUCTION COMPLETION REPORT  
FOR THE  
McLAREN TAILINGS ABANDONED MINE SITE  
RECLAMATION PROJECT  
DEQ CONTRACT NO. 41001**

Prepared for:

***Mr. Tom Henderson  
Montana Department of Environmental Quality/  
Mine Waste Cleanup Bureau  
P.O. Box 200901  
Helena, Montana 59620***

Prepared by:

***Pioneer Technical Services, Inc.  
P.O. Box 3445  
Butte, Montana 59701***

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**April 30, 2012**

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## LIST OF ACRONYMS

AML – Abandoned Mine Land  
AMRB – Abandoned Mine Reclamation Bureau  
bcy – bank cubic yards  
BMPs – Best Management Practices  
CCR – Construction Completion Report  
COCs – Contaminants of Concern  
cy – cubic yards  
DAC – Data Acquisition Control  
DCB - Dewatering Control Building  
DEQ – Montana Department of Environmental Quality  
DOJ – U.S. Department of Justice  
DSL – Department of State Lands  
EEE/CA - Expanded Engineering Evaluation/Cost Analysis  
EPA – U.S. Environmental Protection Agency  
GSM – Golden Sunlight Mine  
MCC – Motor Control Center  
MWCB – Mine Waste Cleanup Bureau  
Knife River – Knife River-Yellowstone Division  
Pioneer – Pioneer Technical Services, Inc.  
P.O. – Post Office  
QA – Quality Assurance  
U.S. – United States  
USFS – U.S. Department of Agriculture/Forest Service

## 1.0 INTRODUCTION

### 1.1 PROJECT DESCRIPTION

The McLaren Tailings Abandoned Mine Site (Site) is an abandoned hardrock mine/mill site listed on the Montana Department of Environmental Quality/Mine Waste Cleanup Bureau (DEQ/MWCB) (formally the Department of State Lands/Abandoned Mine Reclamation Bureau [DSL/AMRB]) Priority Sites List. At the McLaren Tailings Abandoned Mine Site, identified waste sources including mill tailings and waste rock are located within the historic floodplain of Soda Butte Creek. The waste materials discharge acid mine drainage impacting water quality and sediment quality in Soda Butte Creek. The contaminants of concern (COCs) include aluminum, arsenic, barium, cadmium, chromium, copper, mercury, iron, lead, manganese, nickel, and zinc. Soda Butte Creek downstream from the site contains elevated concentrations of copper, iron and manganese.

The purpose of this reclamation project is to limit human and environmental exposure to the COCs, reduce the mobility and migration of these COCs, and mitigate impacts to the local surface water and groundwater. The reclamation project plan involves removal of waste materials from designated areas and placement of the stabilized tailings in an on-site repository.

Due to the short construction seasons at the McLaren Tailings Abandoned Mine Site and the large volume of mine wastes present, the reclamation project will be completed over a six-year period. The McLaren Tailings Abandoned Mine Reclamation Project began in 2010 and consists of 1,963 calendar days. The 2011 reclamation project construction season started on June 13, 2011 and was shutdown on October 20, 2011 for the winter. Winter dewatering operations began October 14, 2011 and will continue until approximately May 1, 2012. This 2011 Construction Completion Report (CCR) documents the work completed by the Contractor during the second construction season. A detailed description of the 2010 construction season is provided in the *Final Construction Completion Report for the McLaren Tailings Abandoned Mine Site* (DEQ/MWCB-Pioneer, 2011).

### 1.2 LOCATION AND ACCESS

The McLaren Tailings Abandoned Mine Site Reclamation Project is located in Park County in Section 25 of Township 9 South, Range 14 East of the Montana Principal Meridian. The Site is accessed by traveling 1/4 mile east of Cooke City, Montana, along Montana Highway 212 and turning south onto a dirt road that exits the highway. The Site is located less than 500 feet south of the highway and encompasses an area of approximately 20 acres.

### 1.3 LAND OWNERSHIP

The McLaren Tailings Abandoned Mine Site is owned by the DEQ under an agreement between U.S. Department of Justice (DOJ), U.S. Environmental Protection Agency (EPA), and DEQ.



## 1.4 SITE HISTORY

An Expanded Engineering Evaluation/Cost Analysis (EEE/CA) was completed in 2002. Results of environmental and engineering investigations performed prior to 2002 are summarized in the *Draft Final Engineering Evaluation/Cost Analysis for the McLaren Tailings Site Cooke City, Montana* (DEQ/MWCB-Pioneer, 2002). The preferred reclamation alternative was Alternative 5b: On-Site Disposal in an Un-Lined Repository with a Multi-Layered Cap. All mine waste materials currently located at the Site (tailings impoundment and dam, waste rock dump, and materials within the old stream channel) were to be excavated and disposed of in an on-site repository constructed on the elevated bench located southwest of the current location of the tailings impoundment. The multi-layered cap installed on the repository was to consist of an impermeable liner, a drainage layer, and the vegetated cover component of the cap, which would be a minimum of 2 feet thick.

Additional investigations were completed in September 2008 to support the site reclamation design for the McLaren Tailings Abandoned Mine Site. The field investigations included an existing cover soil investigation, additional investigation of the proposed repository location, source area investigation, groundwater investigation within the tailings area, surface water sampling, geotechnical investigation, stream channel investigation, seismic stability analysis, and haul route analysis. A detailed description of the results can be found in the *Final Reclamation Design Report for the McLaren Tailings Abandoned Mine Site Cooke City, Montana* (DEQ/MWCB-Pioneer, 2009). The results of these investigations were utilized to develop the final reclamation design and construction bid package completed in October 2009.

On April 2, 2010, the DEQ executed an Agreement with Knife River to implement the McLaren Tailings Abandoned Mine Site Project under DEQ Contract #410010.

On June 13, 2011, Knife River mobilized to the McLaren Tailings Abandoned Mine Site to initiate the second year construction activities for the Site. This CCR summarizes the construction activities associated with the 2011 construction season.

## 2.0 **RESPONSIBLE PARTIES**

### 2.1 DEQ/MWCB COORDINATION

From 2008 through 2011, the DEQ/MWCB Project Manager, Mr. Tom Henderson, Reclamation Specialist, was responsible for coordinating planning phases of the project, as well as for providing technical and regulatory review during the design process, developing the construction bid package and bidding process, regulatory oversight and implementing the construction project.

The Project Manager's address and telephone number are as follows:

Mr. Tom Henderson  
Montana Department of Environmental Quality  
Mine Waste Cleanup Bureau  
P.O. Box 200901  
Helena, Montana 59620  
Telephone: 1-406-841-5052

## 2.2 CONTRACTOR

The Contractor for the project was Knife River – Yellowstone Division (Knife River). The Contractor's address and telephone number are as follows:

Knife River – Yellowstone Division  
1375 4<sup>th</sup> Ave. North, Suite C  
P.O. Box 1498  
Billings, Montana 59101  
Telephone: (406) 651-2520

Mr. Van Hildreth served as Knife River's Project Manager and Mr. Tom Lester served as Knife River's Project Superintendent.

## 2.3 RECLAMATION AND ENGINEERING PLANNING

Under contract with the DEQ/MWCB, Pioneer Technical Services, Inc. (Pioneer) was responsible for planning and providing documentation necessary to facilitate resource managers with the appropriate decision-making tools necessary for full-scale reclamation at the site. Pioneer was also responsible for preparing the final design and engineering specifications for the reclamation project. Under contract with the DEQ/MWCB, Pioneer was responsible for construction oversight. The engineer's address and telephone number are as follows:

Pioneer Technical Services, Inc.  
P.O. Box 3445  
63½ West Broadway  
Butte, Montana 59702  
Telephone: 1-406-782-5177

## 2.4 CONSTRUCTION MONITORING AND QUALITY ASSURANCE INSPECTION

Pioneer performed the quality assurance (QA) inspection for the project. Mr. Doug Richmond functioned as the full-time, on-site inspector. Mr. Joe McElroy, Mr. Will Goldberg, and Mr. Marty Bennett functioned as the design engineers and part-time on-site inspectors, and Mr. McElroy functioned as the Project Manager.



### **3.0 CHRONOLOGICAL LISTING OF EVENTS**

#### **3.1 CONTRACT TIME**

The 2011 construction season was the second year of the six-year contract. The total contract time is 1,963 consecutive calendar days which began on June 1, 2010. As of December 31, 2011, 579 contract days have been used. No additional contract days were added during the 2011 construction season/schedule. The anticipated completion date for the McLaren Tailings Abandoned Mine Reclamation Project is October 15, 2015.

#### **3.2 REPOSITORY REDESIGN**

In December 2010, the onsite repository was redesigned to increase the capacity from 200,000 to 235,600 cubic yards of materials. The repository capacity was increased in response to requirements and restrictions on transporting stabilized tailings on Wyoming Highway 296 imposed by the Wyoming Department of Transportation and the Shoshone National Forest. Expansion of the lateral limits of the repository was not possible due to the presence of Soda Butte Creek and its designed protective buffer to the north, the steep slopes and bedrock outcrops bordering the repository to the south, the existing tailings impoundment located to the east, and the U.S. Forest Service property bordering the repository to the west. In addition, the constructed height of the repository is limited by the maximum design slopes (5 horizontal:1 vertical) required for the stability of the repository soil cap and liner systems. Given these conditions, an increase in repository capacity required a decrease in the elevation of the repository floor.

The primary design consideration associated with reducing the elevation of the repository floor was maintaining adequate separation to groundwater. Fluid level data from the three monitoring wells constructed in the repository area, MW-1, MW-2, and MW-3 documented groundwater elevations from 2005 through 2010. The monitoring data indicated that the depth-to-groundwater was greater than the total depth of monitoring wells MW-2 and MW-3, approximately 41 feet below ground surface (bgs), throughout the monitoring period. Monitoring well MW-2 was located in the northern portion of the repository area, and MW-3 was located in the southwestern portion of the repository. The monitoring data indicated that water was detected in MW-2 only during spring runoff, generally during the months of May and June. Monitoring well MW-1 was located in the southeastern portion of the repository. Using the surveyed elevations of the well casings, the maximum elevation of groundwater was estimated based on the highest recorded fluid level measured in MW-1, and the elevation of the bottom of monitoring wells MW-2 and MW-3.

During the Reclamation Design Investigation conducted in the fall of 2008, two test pits were excavated to a depth of approximately 19 feet bgs in the gully located along the south side of the repository. Groundwater was not encountered in either test pit. However, moist soils were logged in testpit RA-19 at approximately 8.4 feet bgs. The elevation of the moist soils was included in the evaluation of separation to high groundwater conditions.



Table 3-1 summarizes the maximum estimated groundwater elevations, and the separation from the bottom of the original and redesigned repository to the maximum groundwater elevation. Surface water elevations estimated at five surveyed stations in Soda Butte Creek bordering the north side of the repository are included in the evaluation. For each monitoring location, the elevation of original repository floor (2009 Repository) and the redesigned repository (2010 Repository) are provided. As the table indicates, in the original design, the separation distance to groundwater varied from 12.54 feet at the location of MW-1 to 38.64 feet at the location of MW-3. Based on this data, the bottom of the repository was selectively lowered in the redesigned repository at the locations where the maximum separation to high groundwater was present. These locations included the northern and western portions of the repository. In the redesigned repository, the separation distance to groundwater ranged from 11.65 at MW-2 to 23.53 feet at MW-3. The selective deepening of the repository floor facilitated the increase in repository capacity while maintaining the adequate separation from seasonally high groundwater provided by the original design. Seismic stability analysis indicated no stability concerns associated with the new design.

### 3.3 CONSTRUCTION START-UP

An annual Pre-Construction Meeting was held at Montana Tech in Butte, Montana on May 18, 2011. A copy of the Pre-Construction Meeting Minutes is included electronically in Appendix A. The proposed Knife River construction schedule and sequencing was discussed. Other items discussed included submittal process for materials, equipment and pay requests. Construction issues discussed included providing new cross-sections for the additional repository excavation; and installation of new piezometers located in the southwest portion of the repository. Knife River stated that their normal work week would consist of five 10-hour days. However, Knife River requested the option of extending the work hours and/or running night shifts at the site. Prior to extending hours, Knife River agreed to submit a formal written request to DEQ for approval.

Bi-weekly progress meetings were scheduled for every other Wednesday at 8:00 a.m. during the construction season. The meetings were held at the Pioneer Field Office located in Cooke City, Montana, with site visits conducted after the meeting.

Due to late spring snow storms and wet conditions at the Site, Knife River was unable to begin mobilizing equipment until June 13, 2011. Construction work began on June 20, 2011.

### 3.4 PIEZOMETER INSTALLATION

Two piezometers were constructed in the repository on June 20, 2011 to document separation to groundwater in the southern portion of the repository. The drilling was performed by Crowley Environmental Drilling of Butte, Montana using a Mobile B-61 HDX drilling rig equipped with 7-inch diameter outside diameter (OD) hollow stem augers. Both piezometers were constructed using 10 feet of 0.010-inch machine slotted Schedule 40 2-inch diameter screen and flush threaded 2-inch Schedule 40 PVC casing. Piezometer PZ-8 was constructed on the western embankment dam of the repository. This location was selected to provide an undisturbed monitoring point for the duration of the reclamation project. PZ-8 was drilled to a total depth of 24 feet bgs, and screened from 14 feet to 24 feet bgs. PZ-9 was constructed

**TABLE 3-1**  
**2009 & 2010 Repository Design Comparisons to Groundwater/Surface Water Elevations**

Location	Ground Surface Elevation feet	Measuring Point Elevation feet	Depth -to - water * feet	Total Depth feet	High Water Elevation feet	Est. Surface Water Elev. *** feet	2009 Repository Floor Elevation feet	2009 Separation Distance ** feet	2010 Repository Floor Elevation feet	2010 Separation Distance ** feet
MW-1	7630	7632.2	18.1	30	7614.1	NA	7626.64	12.54	7626.64	12.54
MW-2	7643	7645.5	dry	43.7	7601.8	NA	7626.64	24.84	7613.45	11.65
MW-3	7628	7630.5	dry	42.5	7588	NA	7626.64	38.64	7611.53	23.53
RA-19	7615	7615	8.4	18.7	7606.6	NA	7621.72	15.12	7619.88	13.28
Soda Butte Creek Station 1+00	7582.37	NA	NA	NA	NA	7584.37	7617.57	33.2	7610.02	25.65
Soda Butte Creek Station 2+00	7586.18	NA	NA	NA	NA	7588.18	7618.84	30.66	7612.45	24.27
Soda Butte Creek Station 3+00	7593.87	NA	NA	NA	NA	7595.87	7621.74	25.87	7614.3	18.43
Soda Butte Creek Station 4+00	7596.91	NA	NA	NA	NA	7598.91	7622.3	23.39	7620.9	21.99
Soda Butte Creek Station 5+00	7600.11	NA	NA	NA	NA	7602.11	7627.04	24.93	7627.04	24.93

\*. Depth-to-water measurements represent the highest groundwater conditions measured between 6/08 and 7/09.

\*\* - Separation distance represents the distance between the repository floor elevation and the highest groundwater elevations observed at the Site.

\*\*\* - High surface water elevations are estimated to be 2 feet above existing ground surface in Soda Butte Creek.



**TABLE 3-2: 2011 Fluid Level Measurements from Piezometers PZ-8 and PZ-9**

<b>Date</b>	<b>PZ-8 Depth to water</b>	<b>PZ-8 Water Elevation</b>	<b>PZ-9 Depth to water</b>	<b>PZ-9 Water Elevation</b>
06/21/11	18.04	7600.28	ND	ND
06/22/11	18.23	7600.09	ND	ND
06/23/11	18.24	7600.08	ND	ND
06/28/11	19.97	7598.16	ND	ND
06/29/11	20.21	7597.92	ND	ND
07/06/11	21.74	7596.39	ND	ND
07/07/11	ND	ND	ND	ND
07/07/11	ND	ND	NM	NM
07/12/11	ND	ND	ND	ND
07/21/11	ND	ND	ND	ND
07/22/11	ND	ND	ND	ND
07/25/11	ND	ND	ND	ND
08/09/11	ND	ND	NM	NM
08/24/11	ND	ND	NM	NM
08/31/11	ND	ND	NM	NM
09/08/11	ND	ND	NM	NM
09/09/11	ND	ND	NM	NM
09/14/11	ND	ND	NM	NM
09/20/11	ND	ND	NM	NM
09/28/11	ND	ND	NM	NM

**ND = Not detected****NM = Not measured**

approximately 300 feet east of PZ-8. PZ-9 was drilled to a total depth of 18.5 feet bgs and screened from 18.5 to 8.5 feet bgs. In each piezometer, sandy material from the repository excavation was used for the filter pack, and bentonite crumbles were used to seal the upper portion of the annulus.

Fluid levels in piezometer PZ-8 were monitored from June 21 through September 28, 2011. Table 3-2 summarizes the fluid level data. As the Table indicates, water was present in PZ-8 from June 21 through July 6, 2011 and ranged from 18.04 to 21.74 feet below the piezometer casing (the top of the piezometer casing is 2.3 feet above ground surface). During this period, surface water from melting snow was flowing along the southern boundary of the repository and



had ponded near the location of PZ-8. The timing of the disappearance of water in PZ-8 in early July corresponded to the disappearance of surface water from snow melt ponding in the vicinity of PZ-8. The reclamation design includes surface water control ditches that will be constructed along the entire southern perimeter of the repository after it is brought to final grade to divert snowmelt around the repository.

Fluid level measurements were collected from piezometer PZ-9 from June 21 through July 25. Water was not detected in the piezometer during the monitoring period. The piezometer was abandoned on July 25 as required for placement of materials in the repository.

### 3.5 PROJECT SUBMITTALS

Prior to the start of construction, Knife River provided the required submittals as specified in the Pre-Construction Meeting and the Special Provisions. The submittal process is ongoing throughout the McLaren Tailings Abandoned Mine Site reclamation project. Prior to starting a project task, Knife River submitted the required materials submittals, plans, and certifications to the Engineer for approval. The reviewed and approved project submittals for 2011 for the McLaren Tailings Abandoned Mine Reclamation Project are provided electronically in Appendix A.

### 3.6 2011 SUMMER CONSTRUCTION OVERVIEW

Knife River started the 2011 summer construction season work on June 13, 2011 and completed all 2011 summer construction activities on October 20, 2011.

Construction activities during the month of June 2011 included the following:

- Mobilized equipment and materials to the project Site;
- Repaired/replaced Best Management Practices (BMPs) including silt fencing, and stream protection structures damaged during the previous winter;
- Started installing plumbing and electrical components in the Dewatering Control Building (DCB);
- Delivered lime to site;
- Stabilized tailings using the ALLU system in the sediment detention pond area;
- Excavated cover soil from the sediment detention pond stabilization/excavation area;
- Removed the interim cap placed over stockpiled tailings from the 2010 season;
- Continued excavating the on-site repository; and
- Hauled, placed and compacted lime-amended tailings from the sediment detention pond area in the on-site repository.

Construction activities during the month of July 2011 included the following:

- Continued plumbing and electrical work in the DCB;
- Continued lime deliveries;
- Continued stabilizing tailings using the ALLU system in the sediment detention pond area;
- Continued hauling, placing and compacting amended tailings from the sediment detention pond area to the on-site repository;
- Continued excavating the on-site repository;

- Installed and conducted dewatering operations of the sediment detention pond excavation;
- Constructed lime silo and generator pads for the DCB;
- Continued excavating cover soil from the sediment detention pond stabilization/excavation area;
- Excavated, hauled and compacted waste rock in the on-site repository;
- Installed submersible pumps in C3 series pumping wells; and
- Installed the 1,000-gallon propane tank and supply lines in the DCB;

Construction activities during the month of August 2011 included the following:

- Continued electrical work in the DCB;
- Flathead Electric energized the DCB;
- Continued lime deliveries;
- Continued stabilizing tailings using the ALLU system in the sediment detention pond area;
- Continued hauling, placing and compacting amended tailings from the sediment detention pond area to the on-site repository;
- Continued excavating the on-site repository;
- Continued dewatering operations at the sediment detention pond excavation area;
- Continued excavating cover soil from the sediment detention pond stabilization/excavation area;
- Installed temporary lime silo on the east side of the site;
- Initiated spreading and disking of lime into unamended tailings in the on-site repository; and
- Initiated pumping from C1 series dewatering wells.

Construction activities during the month of September 2011 included the following:

- Continued electrical work in the DCB and perimeter pumping wells;
- Continued lime deliveries;
- Continued stabilizing tailings using the ALLU system in the sediment detention pond area;
- Continued hauling, placing and compacting amended tailings from sediment detention pond area to the on-site repository;
- Continued dewatering operations of the sediment detention pond excavation area;
- Continued excavation of cover soil from sediment detention pond stabilization/excavation area;
- Continued spreading and disking of lime into unamended tailings in the on-site repository;
- Initiated placement of embankment fill for sediment pond;
- Completed excavating waste rock area located north of Soda Butte Creek;
- Installed C2 series pumping wells buried piping;
- Installed C3 series submersible pumps;
- Installed sediment pond outlet structure; and
- Constructed the sediment detention pond inlets from the DCB.

Construction activities during the month of October 2011 consisted of the following:

- Continued electrical work in the DCB and pumping wells;
- Continued placing embankment fill for sediment detention pond;
- Installed the water by-pass channel drop structure;



- Installed 18-inch by-pass pipe and perforated drain pipe on the south side of the sediment detention pond;
- Lowered C1 series pumping wells steel casings to final elevations;
- Installed pitless adapters and wiring in C1 series pumping wells;
- Installed the interim repository liner over amended tailings;
- Installed the sediment detention pond liner;
- Hydromulched specified disturbed areas;
- Installed the wildlife exclusion fence around the sediment detention pond;
- Initiated pumping from C3 series wells to begin filling sediment detention pond;
- Installed sediment detention pond Gunderbooms;
- Completed shaping and grading of stockpiles and waste rock excavation area;
- Initiated winter operations at the DCB;
- Implemented winter shutdown measures and BMPs;
- Tested emergency backup generator for proper operation; and
- Decontaminated equipment, and secured the site for winter operations.

All summer construction activities were completed and equipment demobilized from the site on October 20, 2011.

### 3.7 SUBSTITUTION REQUESTS

During the 2011 construction season at the McLaren Tailings Abandoned Mine Site Reclamation Project four substitution request forms were submitted to the Project Engineer by Knife River. The first two substitutions requested inserting a solid bottom in sediment detention pond outlet structure and the use of black powder coat instead of paint. The DEQ and Engineer approved these substitutions with remarks on March 31, 2011.

The third substitution request submitted by Knife River in 2011 proposed using a vertical silo for lime storage instead of the lime storage guppies utilized during the 2010 season. This modification was designed to improve the rate of lime transfer to the ALLU mixer, ultimately increasing the rate of tailings stabilization. The DEQ and Engineer approved these substitutions with remarks on March 31, 2011.

The fourth substitution request proposed that Knife River be allowed to use an alternative method to mix lime with the tailings in addition to using the ALLU system. The Knife River proposed using a lime spreader and soil stabilizer to stabilize the tailings. The DEQ and Engineer conditionally approved this alternative method on April 4, 2011.

### 3.8 WORK DIRECTIVE CHANGES

During the 2011 construction season at the McLaren Tailings Abandoned Mine Site Reclamation Project a total of nine Work Directive Changes were executed. Six of these Work Directive Changes resulted in the following change orders outlined in the section below. The executed Work Directive Changes are provided electronically in Appendix A.



### 3.9 CHANGE ORDERS

Five change orders (Change Order 2 through Change Order 6) were issued for the project during the 2011 construction season. Brief description and justification is provided below. A copy of each change order is provided electronically in Appendix B.

#### **Change Order #2**

Change Order #2 was issued on January 14, 2011. Change Order #2 removed bid items from the Contract that was associated with the transportation of stabilized tailings to the Golden Sunlight Mine (GSM) for reprocessing. This change was required after new requirements and restrictions were imposed by the Wyoming Department of Transportation and the Shoshone National Forest on transporting stabilized tailings on Wyoming Highway 296.

- Change Order #2 decreased the total contract amount by \$4,120,450.00.
- Change Order #2 deleted the following bid items from the Contract:
- Bid Item A-2a – Provide, Install and Remove Truck Scale; and
- Bid Item A-2b – Excavate, Load Haul, Stockpile, Scale and Transport Stabilized Tailings Materials to Off-Site Processing Facility.
- Change Order #2 left the following bid items unchanged:
- Bid Item A-2c – Excavate, Load, Haul, Place and Compact Stabilized Tailings, Mine Wastes and Impacted Soils in Repository; and
- Bid Item A-2d – Excavate Repository and Stockpile Soils.

Change Order #2 decreased the total contract amount by \$4,120,450.00.

#### **Change Order #3**

Change Order #3 was issued on January 17, 2011. Change Order #3 provided for the installation of a French drain and piping system beginning at the southeast corner of the DCB. Excavation activities associated with the construction of the DCB Pad and excavation of the southern slope adjacent to the building exposed a spring. To mitigate the ponding of water and freeze/thaw effects on the building footings and slab, a French drain was installed near the end of the 2010 construction season. Change Order #3 increased the total contract amount by \$1,890.00.

#### **Change Order #4**

Change Order #4 was issued on July 12, 2011. Change Order #4 moved the automatic transfer switch, electric meter base and backup generator from the east side of the DCB to the north side of the building. This change in location was based on recommendations from the electrician and project electrical engineer after damage to the building was sustained the previous winter from

the snow sliding off the roof on the east side. The backup generator was also moved 10 feet away from the building to facilitate snow removal from around the generator. Change Order #4 increased the total contract amount by \$8,922.49.

#### **Change Order #5**

Change Order #5 was issued on October 16, 2011. Excavation activities associated with the construction of the sediment detention pond exposed multiple springs/seeps along the south slope of the excavation. To avoid potentially compromising the stability of the constructed backfill slope and sediment detention pond liner from groundwater, Knife River was directed to install two 4-inch diameter PVC Standard Dimension Ratio (SRD) 35 perforated drain pipes. The trench and drain pipes were backfilled with 1.5-inch screened gravel from Station 0+50 to Station 4+50. Approximately 6 inches of 1.5-inch screened gravel was placed above the drain pipes and overlain with a 6.0 ounce non-woven fabric. At Station 4+50, the perforated drain pipes were connected to two 4-inch diameter PVC solid wall pipes, which were installed from Station 4+50 to Station 7+25. The drain pipes discharge into storm water Channel #5. Change Order #5 increased the total contract amount by \$23,400.00.

#### **Change Order #6**

Change Order #6 was issued on October 16, 2011. Excavation activities associated with the construction of the sediment detention pond revealed additional tailings that required stabilization and removal to construct the sediment detention pond. In addition, cut materials that were to be utilized as structural fill to construct the sediment detention pond were determined to be unsuitable for structural fill and were salvaged as cover soil. Because of the additional excavation and unsuitable structural fill, Knife River was required to obtain the structural fill materials from the waste rock area. Based on surveys and calculations by the Contractor and Engineer, it was agreed that 18,504 bank cubic yards of additional structural fill was required to construct the sediment detention pond north embankment and bring the floor to the specified elevations. The construction of the sediment detention pond was bid as a lump sum item based on design quantities and the excavation, loading, transportation, placement, and compaction of the required additional backfill materials was a change in conditions. Change Order #6 increased the total contract amount by \$92,520.00.

### **3.10 WORK STOPPAGES**

There were no official work stoppages during the 2011 construction season/schedule.

### **3.11 WORK PROGRESS**

Initial mobilization to the site was delayed by late spring snow storms. Wet conditions also slowed initial work activities. Knife River obtained a new mixing head for the ALLU system that generated more torque, which improved mixing/stabilization production. Knife River also changed quicklime supplier to obtain a more consistent product that would not plug the system feed lines that hampered production during the 2010 construction season. The quicklime used during the 2011 season was a 1/8-inch minus product (3/8-inch minus quicklime product was used during the 2010 construction season). The primary focus of work this year was to



complete the excavation of the repository, excavate and stabilize tailings with lime, continue construction of the water treatment plant, and construct the sediment detention pond utilized in the water treatment process. The project design specifications require the removal of all tailings from the footprint of the sediment detention basin and associated embankments. In mid-July, Knife River excavated the deeper tailings materials from near the lower excavation boundary large volumes of groundwater entered the excavation. Groundwater also entered the excavation along the south edge of the sediment detention pond excavation. Knife River installed temporary pumps to dewater the excavation. This water was then pumped to a series of infiltration ponds located on the east and south sides of the repository. This water was sampled on August 24; laboratory analytical results are provided in Appendix E. The infiltration rate of the ponds limited the amount of groundwater could be pumped from the excavation area. Well C1-2 (also sampled on August 24, 2011) was activated, but had minimal effect on the amount of groundwater entering along the south side of the excavation. This condition is likely attributable to the existence of preferential groundwater flow pathways along the contact between the soil and bedrock, which were outside the zone of influence of the C1 series wells.

In August, Knife River requested that they be allowed to stabilize tailings using an alternative method by spreading unamended tailings in lifts 4 to 6 inches thick and adding lime via spreader type machine on the surface of the tailings and disking the lime into the tailings with an agricultural disk. The DEQ concurred and Knife River obtained the necessary equipment to initiate this method of stabilizing the tailings. Once the lime was incorporated, the tailings was then compacted in-place. This method worked satisfactorily, and met specified compaction requirements. By using both methods to Knife River was able to increase the overall excavation production within the sediment detention pond footprint.

### 3.12 WEATHER DAYS

During the 2011 Construction season there were 13 weather days that slowed work on the McLaren Tailing Project. These days occurred primarily from late spring snow storms not allowing the mobilization of equipment to the site. The following are a list of the documented weather days:

- June 1, 2011 through June 12, 2011 (12 days); and
- October 7, 2011.

### 3.13 REQUESTS FOR PAYMENT

Knife River issued 8 Requests for Payment for work performed in 2011. Copies of the Requests for Payment are included electronically in Appendix C.

**Pay Request #6** for \$65,613.49 for stabilized tailings stockpiled in the repository and progress payment towards Provide and Install Electrical System, for the backup generator stored in Billings, Montana, February 2, 2011.

**Pay Request #7** for \$627,062.67 for the work completed from project start-up through June 30, 2011.



**Pay Request #8** for \$1,165,769.48 for the work completed from July 1, 2011 through July 31, 2011.

**Pay Request #9** for \$897,395.36 for the work completed from August 1, 2011 through August 31, 2011.

**Pay Request #10** for \$871,658.93 for the work completed from September 1, 2011 through September 30, 2011.

**Pay Request #11** for \$346,712 for the work completed from October 1, 2011 through October 31, 2011.

**Pay Request #12** for \$33,402.49 for the work completed from November 1, 2011 through November 31, 2011.

**Pay Request #13** for \$25,050.00 for the work completed from December 1, 2011 through December 31, 2011.

### 3.14 2011 WINTER SHUTDOWN

The 2011 summer construction season ended on October 20, 2011. Due to the elevation of the McLaren Tailings Abandoned Mine Site project, substantial snowfall and severe cold conditions are experienced fairly early in the fall bringing normal construction activities to a halt. As specified in the Contract, Winter Operations and Maintenance was initiated by Knife River on October 14, 2011.

### 3.15 2011 WINTER SHUTDOWN INSPECTION

Prior to demobilizing equipment and personnel from the site, Knife River completed all 2011 Winter Shutdown Punch List items. These items consisted primarily of reinforcing storm water runoff controls, minor site grading, and marking all potential hazards to the snow plow and other vehicles. Outstanding issues as of October 20, 2011, included backup generator was non-operational, pumping wells C3-3 and C3-10 were not operational and transducers needed to be installed in all pumping wells. The generator and well issues were corrected on October 26, 2011, when TWE Enterprise completed repairs on the generator. COP Construction and Advantage Electrical replaced the pump in C3-3; however, the well pump was still shorted out. It was suspected that there was a short in the wiring between building and pumping well C3-3. Because of the depth of frost in the ground it was decided to wait until spring 2012 to repair/replace the wiring to C3-3 pumping well. Pioneer directed COP and Advantage to jumper the wiring from C3-2 to C3-3.

During initial startup of the C3 series wells, the electrical breakers in the Motor Control Center (MCC) continually kept tripping. This is primarily due to the higher incoming voltage into the DCB causing the pumping well motors to overload and trip the breaker. Advantage Electric changed the thermal resistors to minimize overloading. The transducers will be installed in early 2012.

As part of the Winter Operations and Maintenance at the site, Knife River is responsible for providing propane and diesel delivery truck and vehicle access to the DCB throughout the winter months. This entails plowing snow from the West Bridge access gate to the building. The U.S. Department of Interior/National Park Service (NPS) is responsible for snow removal from the North Entrance Gate through Cooke City, Montana. Typically, snow plowing ended approximately 300 yards west of the West Bridge access gate, from that point the Cooke City Snowmobile Club begins their trail grooming operations. On November 8, 2011, Pioneer, DEQ, NPS and a representative from the Cooke City Snowmobile Club met on-site to discuss snow plowing of the road to the West Bridge access gate. The Snowmobile Club requested that the NPS plow the road from guardrail to guardrail to the access gate and place no parking signs at the gate entrance. The Snowmobile Club also requested that the end jersey barrier on the west side of the access gate entrance be removed for the winter to allow easier operation of the snow groomer.

Details of the inspections and meetings can be found on the completed daily inspection logs/field notes for the McLaren Tailings Abandoned Mine Site Reclamation Project and are provided electronically in Appendix D.

### 3.16 2011 WINTER OPERATIONS OVERVIEW

During winter operations, extending from October 15 to May 30, groundwater is pumped from perimeter wells C1-2, C1-3, C3-1, C3-3, C3-4 and C3-9 to the piping manifold located in the DCB. The manifold then directs the water out of the DCB wall to the sediment detention pond. Pumped water is not treated through lime addition during winter operations. Water flows through the sediment detention pond before being discharged to Soda Butte Creek via the stop log structure and Storm Water Channel 5 located at the south end of the pond.

During winter operations, perimeter water is pumped and processed through the sediment detention pond for the following reasons:

- To intercept groundwater before it enters the mine reclamation site;
- To keep water within the sediment detention pond from completely freezing; and
- Prevent the flotation of the sediment detention pond liner during spring runoff and the associated rise in groundwater level at the site.

During winter operations the pumping system is visually inspected by Contractor personnel a minimum of twice per day (during morning and afternoon hours), seven days per week.

Operators also complete daily sampling and field analysis for the following parameters:

- pH; Temperature; Total dissolved solids; Total suspended solids; Specific Conductance; Turbidity; Field iron; and Field manganese.

In addition to daily sampling and field analysis the operator was required to perform the following tasks:

- Collect, prepare and ship water samples for laboratory analysis once per month.



- Monitor pumping flow rates and performance of perimeter wells C1-2, C1-3, C3-1, C3-3, C3-4, and C3-9;
- Respond to all alarms 24 hours per day, 7 days a week;
- Monitor and coordinate delivery of propane for the heating system;
- Monitor and coordinate delivery of diesel for the backup generator;
- Maintain building power and heating systems; and
- Remove snow and conduct site access maintenance.

Winter operations began on October 14, 2011 and will continue until late May 2012. A detailed description of the winter operation procedures of the DCB can be found in the *Final Winter 2011 – 2012 Operations and Maintenance for the McLaren Tailings Abandoned Mine Site Cooke City, Montana* (DEQ/MWCB-Pioneer, 2011). Field and laboratory sampling results are provided electronically in Appendix E and perimeter pumping well flow rates are results are provided electronically in Appendix F.

## 4.0 2011 CONSTRUCTION

### 4.1 SUMMARY OF THE PROJECT

The 2011 project construction consisted of the following:

- Mobilized and demobilized equipment to the Site;
- Repaired/replaced existing BMPs;
- Excavated 23,600 bcy from the repository for cover soil and structural fill materials;
- Salvaged 12,620 bcy of cover soil from the sediment detention pond excavation area;
- Implemented initial construction dewatering;
- Provided, stored and handled 3,205 tons of quick lime;
- Stabilized 38,000 bcy of tailings from the sediment detention pond excavation area;
- Excavated, loaded, hauled, and placed 55,781 bcy of stabilized tailings, mine wastes, and impacted soils in repository;
- Provided and installed all piping and specified equipment in the DCB;
- Installed all electrical wiring and fixtures in the DCB and pumping wells;
- Provided and installed perimeter water by-pass piping;
- Provided and installed 4-inch drain pipe along south edge of sediment detention pond;
- Backfilled sediment detention pond excavation area with structural fill materials to achieve the designed subgrade elevations;
- Provided and installed perimeter well pumps;
- Installed 1,000-gallon propane tank;
- Provided and installed inlets and stop-log outlet for sediment detention pond;
- Provided and installed 36-mil reinforced polypropylene sediment detention pond liner;
- Installed interim cap over stabilized tailings in repository;
- Installed wildlife exclusion fence around perimeter of sediment detention pond; and
- Hydromulched cover soil stockpiles.

The area was secured for the winter on October 20, 2011. Winter operations of the Dewatering Control Building began October 14, 2011 and will continue until the spring of 2012 when



summer construction activities will begin and Site conditions permit. Summer construction activities are tentatively scheduled to start on June 1, 2012 but are flexible depending on weather conditions.

#### 4.2 MAJOR EQUIPMENT LIST

Table 4-1 lists the major pieces of equipment used for this project.

**TABLE 4-1  
EQUIPMENT USED AT McLAREN TAILINGS ABANDONED MINE SITE  
RECLAMATION PROJECT 2011 CONSTRUCTION SEASON**

TYPE	MAKE/MODEL	SIZE/CAPACITY
Lime Storage Guppy		
Semi Tractor		Lime Pup
Track Excavator	CAT 336D	ALLU Mixing Head
PF 7+7 Pressure Feeder	ALLU	14 cubic meters
Off-Road Trucks (2 each)	CAT 740C	35 Tons
Track Excavator	John Deere 450C	5 cy
Track Bulldozer	John Deere 850j	
Fork Lift	CAT	
Water Truck	CAT Articulating	5,000 Gallons
Compactor	Hamm 3625	Smooth Drum Roller
Skidsteer	Case 1845C	
Man Lift	Genie S-80	
Crane	Grove RT700E	60 Tons
Fuel Truck		2,500 gallons
Asphalt Reclaimer	CAT RR-250B	
Vintage Lime Spreader		
Agricultural Tractor	CAT Challenger	Rubber Tracked
Agricultural Disk		12 inches
Compactor	Volvo SD160 dx	Smooth Drum Roller
Agricultural Tractor	New Holland 8870	Rubber Tired
Lime Spreader	Stoltz Site Spreader	
Front End Loader	CAT 924G	3 cy for snow removal

cy – cubic yards

#### 4.3 CONTRACTOR EMPLOYEES

The Contractor utilized 3 to 14 employees on the project site at various times. The majority of the labor involved 5 to 7 equipment operators, with the remaining personnel serving in a supervisory capacity.

#### 4.4 SUBCONTRACTORS

During the implementation of the project, Knife River utilized the following subcontractors to complete specific project tasks.

Northwest Linings & Geotextile Products, Inc.

21000 77<sup>th</sup> Avenue

Kent, Washington 98032

Phone: (253) 872-0244

Project Tasks: Installed sediment detention pond liner and interim cap on stabilized tailings.

COP Construction

242 S 64th Street West

Billings, Montana 59106

Phone: (406) 656-4632

Fax: (406) 656-4808

Project Tasks: Installed Dewatering Control Building piping. Performed winter operations and maintenance duties at Dewatering Control Building.

Advantage Electric Plus Inc.

3505 1<sup>st</sup> Avenue South

Billings, Montana 59101

Phone: (406) 256-7446

Fax: (406) 256-7458

Project Tasks: Performed all electrical work for the Dewatering Control Building and Perimeter Wells.

Quality Landscape and Seeding

191 Lower Lynch Creek Road

Plains, Montana 59859-9556

Phone: (406) 826-7300

Project Tasks: Performed hydromulching of soil stockpiles.

Tractor & Equipment Co.

5200 Southgate Drive

Billings, Montana 59101

Phone: (406) 245-4426

Project Tasks: Provided mobile equipment maintenance.

Northern Industrial Hygiene

201 South 30<sup>th</sup> Street

Billings, Montana 59101

Phone: (406) 245-7766

Project Tasks: Provided health and safety services for Knife River.

HKM  
222 North 32nd Street, Suite 700  
Billings, Montana 59101  
Phone: (406) 656-6399  
Project Tasks: Provided QA/QC services for Knife River.

Dick Irvin Trucking  
575 Wilson  
Box 950  
Shelby, Montana 59474  
Phone: (406) 434-5583  
Project Tasks: Transported quick lime to the project site.

ALLU  
Cross Country Pipeline Supply  
2420 Uravan Street  
Aurora, Colorado 80011-3535  
Phone: (303) 361-6797  
Project Tasks: Provided lime mixing equipment for tailings stabilization.

TW Enterprises, Inc.  
636 Logan Lane  
Billings, Montana 59105  
Phone: (406) 245-4600 Ext 16  
Project Tasks: Provided backup generator service and repair.

Wishbone Fencing  
4004 State Highway 24  
Aladdin, Wyoming 82710  
Phone: (307) 896-6347  
Project Task: Provided and installed wildlife exclusion fence.

#### 4.5 CONSTRUCTION ACTIVITIES

##### 4.5.1 Project Oversight

During construction, Pioneer provided project oversight for the McLaren Tailings Abandoned Mine Site Reclamation Project. The responsibility of the oversight personnel is to ensure that the Contractor is implementing the work as specified in the Construction Bid Package and communicate discrepancies to the Engineer, Owner, and Contractor. In addition, the oversight personnel documented the implementation of the project. This documentation consists of daily field notes which are provided electronically in Appendix D.

##### 4.5.2 Quality Assurance

During the construction activities, it is necessary to perform QA measures to ensure the project was being implemented as specified in the Construction Bid Package. These QA measures at the



McLaren Tailings Abandoned Mine Site consisted of sampling for geotechnical parameters (soil proctors), and compaction testing of the sediment detention pond structural fill and stabilized tailings placed in the repository. Laboratory data sheets and results for the sampling and testing conducted during the construction activities at the McLaren Tailings Abandoned Mine Site Reclamation Project can be found electronically in Appendix E.

#### 4.5.3 Project Information

Additional project information collected to document the project includes quick lime scale tickets, and lime usage printout from the ALLU Data Acquisition Controller (DAC). This project information can be found electronically in Appendix F.

#### 4.5.4 Bi-Weekly Progress Meetings

Bi-weekly progress meetings were held during the McLaren Tailings Abandoned Mine Site Reclamation Project. The progress meetings were held at Pioneer's field office located in Cooke City, Montana. The dates and location of the weekly progress meeting were mutually agreed upon by the Contractor, Owner, and Engineer and were typically held at 8:00 a.m. on every other Wednesday during the project. Knife River prepared an agenda and conducted each bi-weekly progress meeting. The meetings identified decisions required, scheduling, milestones accomplished, opportunities, problems, and corrective actions. Each meeting included a discussion of the work to be done in the two weeks following the meeting (two-week look-ahead). Field visits were conducted after each progress meeting. The bi-weekly progress meeting agenda and meeting notes are included electronically in Appendix G.

#### 4.5.5 Daily Activities

Detailed descriptions of the daily construction activities observed by the Pioneer oversight personnel are described in the Daily Project Logs and are provided electronically in Appendix H. Knife River's Quality Control Reports are provided electronically in Appendix I.

#### 4.5.6 Construction Photographs

Daily construction photos were taken by oversight personnel to document construction activities and the implementation of the project. The photographs have been assembled into daily photo logs and are provided electronically in Appendix J.

### 5.0 QUANTITIES USED

#### 5.1 PROJECT SUMMARY

The 2011 summer construction activities were completed in 129 consecutive calendar days. Table 5-1 summarizes the final quantities and costs associated with each pay item for the 2011 construction season. Table 5-1 also lists the Change Orders (modifications) that were not part of the original contract.



**TABLE 5.1**  
**2010 AND 2011**  
**CONSTRUCTION QUANTITIES AND COSTS**

Bid		Estimate		2010				2011		Total to Date		Percent
Item No.	Description	Quantity	Units	Unit Price	Total Price	Quantity	Cost	Quantity	Cost	Quantity	Cost	Completed
<b>1</b>	<b>Mobilization, Bonding and Insurance</b>											
	Mobilization, Bonding and Insurance	1	L.S.	XXXXXXXX	\$ 1,900,000.00	0.5	\$ 950,000.00	0.08	\$ 152,000.00	0.58	\$ 1,102,000.00	58%
<b>2</b>	<b>Facilities and Infrastructure</b>											
a	Provide and Install West Bridge	1	L.S.	XXXXXXXX	\$ 500,000.00	1.0	\$ 500,000.00	0		1.0	\$ 500,000.00	100%
b	Provide and Install East Bridge	1	L.S.	XXXXXXXX	\$ 285,250.00	1.0	\$ 285,250.00	0		1.0	\$ 285,250.00	100%
c	Construct Temporary Haul Roads	3,600	L.F.	\$ 35.000	\$ 126,000.00	900.0	\$ 31,500.00	600	\$ 21,000.00	1,500.0	\$ 52,500.00	42%
d	Maintain and Obliterate Temporary Haul Roads	1	L.S.	XXXXXXXX	\$ 120,900.00	0.2	\$ 24,180.00	0.2	\$ 24,180.00	0.400	\$ 48,360.00	40%
e	Clear, Grub and Timber Removal	1	L.S.	XXXXXXXX	\$ 150,000.00	0.9	\$ 135,000.00	0	\$ -	0.90	\$ 135,000.00	90%
f	Provide, Install and Remove Jersey Barriers	48	EA	\$ 673.000	\$ 32,304.00	40.0	\$ 26,920.00	0	\$ -	40.0	\$ 26,920.00	83%
<b>3</b>	<b>Provide and Install Electrical Systems</b>											
a (S)	Provide and Install Electrical Systems	1	L.S.	XXXXXXXX	\$ 508,000.00	0.1	\$ 71,120.00	0.71	\$ 358,140.00	0.85	\$ 429,260.00	85%
<b>4</b>												
a	Well Abandonment	20	EA	\$ 1,067.000	\$ 21,340.00	1.0	\$ 1,067.00	0	\$ -	1.00	\$ 1,067.00	5%
<b>5</b>	<b>Initial Construction Dewatering System</b>											
a	Install Temporary Submersible Pump	4	EA	\$ 5,000.000	\$ 20,000.00	4.0	\$ 20,000.00	0	\$ -	4.00	\$ 20,000.00	100%
b	Provide and Install Temporary Piping System to Storm Water Channel #5	1	L.S.	XXXXXXXX	\$ 15,200.00	1.0	\$ 15,200.00	0.25	\$ 3,800.00	1.25	\$ 19,000.00	125%
c	Initial Start Up, Monthly Operation, and Maintenance of Initial Construction Dewatering	5	MONTH	\$ 5,000.000	\$ 25,000.00	0.6	\$ 3,000.00	1.3	\$ 6,500.00	1.90	\$ 9,500.00	38%
d	Disassemble Initial Construction Dewatering System	1	L.S.	XXXXXXXX	\$ 1,000.00	0.0	\$ -	1.0	\$ 1,000.00	1.00	\$ 1,000.00	100%
<b>6</b>	<b>Dewatering Control Building</b>											
a	Grade and Install 6 inch Base Course Building Pad	1	L.S.	XXXXXXXX	\$ 148,900.00	1.0	\$ 145,922.00	0.0	\$ -	0.98	\$ 145,922.00	98%
b	Install Concrete Footings and Concrete Slabs	1	L.S.	XXXXXXXX	\$ 95,200.00	1.0	\$ 95,200.00	0.0	\$ -	1.00	\$ 95,200.00	100%
c	Provide and Install Dewatering Control Building	1	L.S.	XXXXXXXX	\$ 158,700.00	0.9	\$ 142,830.00	0.1	\$ 15,870.00	1.00	\$ 158,700.00	100%
d	Provide and Install Insulation	1	L.S.	XXXXXXXX	\$ 38,100.00	1.0	\$ 38,100.00	0	\$ -	1.00	\$ 38,100.00	100%
e	Provide and Install Heating System	1	L.S.	XXXXXXXX	\$ 31,700.00	0.5	\$ 15,850.00	0.5	\$ 15,850.00	1.00	\$ 31,700.00	100%
f	Remove Dewatering Control Building	1	L.S.	XXXXXXXX	\$ 12,700.00	0.0	\$ -	0	\$ -	0.00	\$ -	0%
<b>7</b>												
a	Construct Sediment Detention Pond	1	L.S.	XXXXXXXX	\$ 190,000.00	0.2	\$ 28,500.00	0.85	\$ 161,500.00	1.00	\$ 190,000.00	100%
b	Provide and Install Sediment Detention Pond Inlet #1	1	L.S.	XXXXXXXX	\$ 7,110.00	0.5	\$ 3,555.00	0.5	\$ 3,555.00	1.00	\$ 7,110.00	100%
c	Provide and Install Sediment Detention Pond Inlet #2	1	L.S.	XXXXXXXX	\$ 4,950.00	0.5	\$ 2,475.00	0.5	\$ 2,475.00	1.00	\$ 4,950.00	100%
d	Provide and Install Perimeter Water Bypass	1	L.S.	XXXXXXXX	\$ 5,841.00	1.0	\$ 5,841.00	0	\$ -	1.00	\$ 5,841.00	100%
e	Provide and Install Sediment Detention Pond Outlet Structure	1	L.S.	XXXXXXXX	\$ 35,000.00	0.0	\$ -	1	\$ 35,000.00	1.00	\$ 35,000.00	100%
f	Provide and Install Sediment Detention Pond Liner	6,896	S.Y	\$ 10.500	\$ 72,408.00	0.0	\$ -	6,501.0	\$ 68,260.50	6,501.00	\$ 68,260.50	94%



**TABLE 5.1**  
**2010 AND 2011**  
**CONSTRUCTION QUANTITIES AND COSTS**

Bid Item No.	BID TAB Description	Estimate Quantity	Units	Unit Price	Total Price	2010 Quantity	2010 Cost	2011 Quantity	2011 Cost	Total to Date Quantity	Total to Date Cost	Percent Completed
7	Sediment Pond Construction (cont.)											
h	Provide, Install and Remove Wildlife Exclusion Fence	1,660	LF	\$ 26.500	\$ 43,990.00	0.0	\$ -	1512.0	\$ 40,068.00	1,512.00	\$ 40,068.00	91%
i	Remove Sediment Detention Pond	1	L.S.	XXXXXXXX	\$ 10,000.00	0.0	\$ -	0.0	\$ -	0.00	\$ -	0%
8	Phase I Dewatering System Installation											
a	Phase I Dewatering System Installation	1	L.S.	XXXXXXXX	\$ 175,000.00	0.6	\$ 105,000.00	0.2	\$ 35,000.00	0.80	\$ 140,000.00	80%
b	Miscellaneous Phase I Dewatering Equipment and Operation	3	Construction Schedule	\$ 27,900.000	\$ 83,700.00	0.8	\$ 20,925.00	1.25	\$ 34,875.00	2.00	\$ 55,800.00	67%
9	Instrumentation											
a	Provide and Install 2 inch Schedule 40 PVC Pipe	240	L.F.	\$ 21.500	\$ 5,160.00	0.0	\$ -	180.0	\$ 3,870.00	180.00	\$ 3,870.00	75%
b	Provide and Install 3 inch Schedule 40 PVC Pipe	100	L.F.	\$ 23.000	\$ 2,300.00	0.0	\$ -	123.0	\$ 2,829.00	123.00	\$ 2,829.00	123%
c	Provide and Install 4 inch Schedule 40 PVC Pipe	100	L.F.	\$ 33.000	\$ 3,300.00	0.0	\$ -	79.0	\$ 2,607.00	79.00	\$ 2,607.00	79%
d	Provide and Install 6 inch Schedule 40 PVC Pipe	10	L.F.	\$ 39.500	\$ 395.00	0.0	\$ -	14.0	\$ 553.00	14.00	\$ 553.00	140%
e	Provide and Install 8 inch Schedule 40 PVC Pipe	140	L.F.	\$ 51.000	\$ 7,140.00	0.0	\$ -	114.0	\$ 5,814.00	114.00	\$ 5,814.00	81%
f	Provide and Install 8 inch Schedule 40 PVC Pipe Coupling	1	E.A.	\$ 330.000	\$ 330.00	0.0	\$ -	1.0	\$ 330.00	1.00	\$ 330.00	100%
g	Provide and Install 2-inch 90 degree Schedule 40 PVC Elbow	17	E.A.	\$ 108.000	\$ 1,836.00	0.0	\$ -	13.0	\$ 1,404.00	13.00	\$ 1,404.00	76%
h	Provide and Install 3-inch 90 degree Schedule 40 PVC Elbow	4	E.A.	\$ 152.000	\$ 608.00	0.0	\$ -	9.0	\$ 1,368.00	9.00	\$ 1,368.00	225%
i	Provide and Install 4-inch 90 degree Schedule 40 PVC Elbow	10	E.A.	\$ 165.000	\$ 1,650.00	0.0	\$ -	14.0	\$ 2,310.00	14.00	\$ 2,310.00	140%
j	Provide and Install 6-inch 90 degree Schedule 40 PVC Elbow	1	E.A.	\$ 190.000	\$ 190.00	0.0	\$ -	3.0	\$ 570.00	3.00	\$ 570.00	300%
k	Provide and Install 8-inch 90 degree Schedule 40 PVC Elbow	8	E.A.	\$ 254.000	\$ 2,032.00	0.0	\$ -	9.0	\$ 2,286.00	9.0	\$ 2,286.00	113%
l	Provide and Install 8-inch X 8-inch x 6-inch 45 degree Schedule 40 PVC Reducing Wye	1	E.A.	\$ 787.000	\$ 787.00	0.0	\$ -	1.0	\$ 787.00	1.0	\$ 787.00	100%
m	Provide and Install 2-inch X 2-inch X 2-inch Schedule 40 PVC Pipe Tee	28	E.A.	\$ 110.000	\$ 3,080.00	0.0	\$ -	21.0	\$ 2,310.00	21.0	\$ 2,310.00	75%
n	Provide and Install 3-inch X 3-inch X 3-inch Schedule 40 PVC Pipe Tee	6	E.A.	\$ 116.000	\$ 696.00	0.0	\$ -	9.0	\$ 1,044.00	9.0	\$ 1,044.00	150%
o	Provide and Install 4-inch X 4-inch X 4-inch Schedule 40 PVC Pipe Tee	2	E.A.	\$ 178.000	\$ 356.00	0.0	\$ -	2.0	\$ 356.00	2.0	\$ 356.00	100%
p	Provide and Install 8-inch X 8-inch X 8-inch Schedule 40 PVC Pipe Tee	2	E.A.	\$ 444.000	\$ 888.00	0.0	\$ -	2.0	\$ 888.00	2.0	\$ 888.00	100%
q	Provide and Install 2-inch Schedule 40 PVC Pipe End Cap	14	E.A.	\$ 109.000	\$ 1,526.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
r	Provide and Install 3-inch Schedule 40 PVC Pipe End Cap	3	E.A.	\$ 105.000	\$ 315.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
s	Provide and Install 4-inch Schedule 40 PVC Pipe End Cap	1	E.A.	\$ 152.000	\$ 152.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
t	Provide and Install 8-inch Schedule 40 PVC Pipe End Cap	4	E.A.	\$ 203.000	\$ 812.00	0.0	\$ -	3.0	\$ 609.00	3	\$ 609.00	75%



**TABLE 5.1**  
**2010 AND 2011**  
**CONSTRUCTION QUANTITIES AND COSTS**

Bid	BID TAB	Estimate				2010		2011		Total to Date		Percent
Item No.	Description	Quantity	Units	Unit Price	Total Price	Quantity	Cost	Quantity	Cost	Quantity	Cost	Completed
9	Dewatering Control Building Piping, Valves, and Instrumentation (cont.)											
u	Provide and Install 8-inch X 2-inch Schedule 40 PVC Clamp on Saddle	27	E.A.	\$ 241.000	\$ 6,507.00	0.0	\$ -	20.0	\$ 4,820.00	20	\$ 4,820.00	74%
v	Provide and Install 8-inch X 3-inch Schedule 40 PVC Saddle	6	E.A.	\$ 254.000	\$ 1,524.00	0.0	\$ -	10.0	\$ 2,540.00	10	\$ 2,540.00	167%
w	Provide and Install 8-inch X 4-inch Schedule 40 PVC Saddle	3	E.A.	\$ 406.000	\$ 1,218.00	0.0	\$ -	4.0	\$ 1,624.00	4.0	\$ 1,624.00	133%
x	Provide and Install 4-inch X 2-inch Schedule 40 PVC Reducer	6	E.A.	\$ 165.000	\$ 990.00	0.0	\$ -	3.0	\$ 495.00	3.0	\$ 495.00	50%
y	Provide and Install 3-inch X 2-inch Schedule 40 PVC Reducer	8	E.A.	\$ 165.000	\$ 1,320.00	0.0	\$ -	8.0	\$ 1,320.00	8.0	\$ 1,320.00	100%
z	Provide and Install 4-inch Schedule 40 PVC Check Valve	2	E.A.	\$ 2,158.000	\$ 4,316.00	0.0	\$ -	2.0	\$ 4,316.00	2.0	\$ 4,316.00	100%
aa	Provide and Install 2-Inch Air Relief Valve	17	E.A.	\$ 279.000	\$ 4,743.00	0.0	\$ -	17.0	\$ 4,743.00	17.0	\$ 4,743.00	100%
ab	Provide and Install 3-Inch Pipe Hangers	3	E.A.	\$ 343.000	\$ 1,029.00	0.0	\$ -	2.0	\$ 686.00	2.0	\$ 686.00	67%
ac	Provide and Install 8-Inch Pipe Hangers	10	E.A.	\$ 406.000	\$ 4,060.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
ad	Provide and Install 2-inch Flow Meter	12	E.A.	\$ 2,412.000	\$ 28,944.00	0.0	\$ -	11.0	\$ 26,532.00	11.0	\$ 26,532.00	92%
ae	Provide and Install 8-inch Flow Meter	1	E.A.	\$ 6,602.000	\$ 6,602.00	0.0	\$ -	1.0	\$ 6,602.00	1.0	\$ 6,602.00	100%
af	Provide and Install 2-inch Gate Valve	13	E.A.	\$ 203.000	\$ 2,639.00	0.0	\$ -	10.0	\$ 2,030.00	10.0	\$ 2,030.00	77%
ag	Provide and Install 3-inch Gate Valve	4	E.A.	\$ 267.000	\$ 1,068.00	0.0	\$ -	6.0	\$ 1,602.00	6.0	\$ 1,602.00	150%
ah	Provide and Install 4-inch Gate Valve	1	E.A.	\$ 508.000	\$ 508.00	0.0	\$ -	1.0	\$ 508.00	1.0	\$ 508.00	100%
ai	Provide and Install 6-inch Lever Handle Type Butterfly Valve	1	E.A.	\$ 533.000	\$ 533.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
aj	Provide and Install 8-inch Lever Handle Type Butterfly Valve	3	E.A.	\$ 736.000	\$ 2,208.00	0.0	\$ -	3.0	\$ 2,208.00	3.0	\$ 2,208.00	100%
ak	Provide and Install 6-inch ANSI PVC Flange for 6" Butterfly Valve	2	E.A.	\$ 203.000	\$ 406.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
al	Provide and Install 8-inch ANSI PVC Flange	8	E.A.	\$ 241.000	\$ 1,928.00	0.0	\$ -	8.0	\$ 1,928.00	8.0	\$ 1,928.00	100%
am	Provide and Install 2-inch PVC Ball Valve	26	E.A.	\$ 178.000	\$ 4,628.00	0.0	\$ -	25.0	\$ 4,450.00	25.0	\$ 4,450.00	96%
an	Provide and Install 3-inch PVC Ball Valve	8	E.A.	\$ 216.000	\$ 1,728.00	0.0	\$ -	10.0	\$ 2,160.00	10.0	\$ 2,160.00	125%
ao	Provide and Install 4-inch PVC Ball Valve	8	E.A.	\$ 279.000	\$ 2,232.00	0.0	\$ -	8.0	\$ 2,232.00	8.0	\$ 2,232.00	100%
ap	Provide and Install 2-inch Unistrut Clamp	42	E.A.	\$ 165.000	\$ 6,930.00	0.0	\$ -	30.0	\$ 4,950.00	30.0	\$ 4,950.00	71%
aq	Provide and Install 3-inch Unistrut Clamp	12	E.A.	\$ 190.000	\$ 2,280.00	0.0	\$ -	29.0	\$ 5,510.00	29.0	\$ 5,510.00	242%
ar	Provide and Install 4-inch Unistrut Clamp	7	E.A.	\$ 216.000	\$ 1,512.00	0.0	\$ -	12.0	\$ 2,592.00	12.0	\$ 2,592.00	171%
as	Provide and Install 8-inch Unistrut Clamp	11	E.A.	\$ 203.000	\$ 2,233.00	0.0	\$ -	11.0	\$ 2,233.00	11.0	\$ 2,233.00	100%



TABLE 5.1

2010 AND 2011

## CONSTRUCTION QUANTITIES AND COSTS

Bid	BID TAB	Estimate		2010				2011		Total to Date		Percent
Item No.	Description	Quantity	Units	Unit Price	Total Price	Quantity	Cost	Quantity	Cost	Quantity	Cost	Completed
9	Dewatering Control Building Piping, Valves, and Instrumentation (cont.)											
at	Provide and Install Unistrut "L" Bracket	4	E.A.	\$ 305.000	\$ 1,220.00	0.0	\$ -	3.0	\$ 915.00	3.0	\$ 915.00	75%
au	Provide and Install Unistrut Channel	126	L.F.	\$ 33.000	\$ 4,158.00	0.0	\$ -	176.0	\$ 5,808.00	176.0	\$ 5,808.00	140%
av	Provide and Install 2-inch Female Cam-Lok	5	E.A.	\$ 203.000	\$ 1,015.00	0.0	\$ -	2.0	\$ 406.00	2.0	\$ 406.00	40%
aw	Provide and Install 2-inch Male Cam-Lok	5	E.A.	\$ 190.000	\$ 950.00	0.0	\$ -	4.0	\$ 760.00	4.0	\$ 760.00	80%
ax	Provide and Install 4-inch Female Cam-Lok	9	E.A.	\$ 203.000	\$ 1,827.00	0.0	\$ -	7.0	\$ 1,421.00	7.0	\$ 1,421.00	78%
ay	Provide and Install 4-inch Male Cam-Lok	11	E.A.	\$ 203.000	\$ 2,233.00	0.0	\$ -	9.0	\$ 1,827.00	9.0	\$ 1,827.00	82%
az	Provide and Install 4-inch Cam-Lok Protective Cover	2	E.A.	\$ 330.000	\$ 660.00	0.0	\$ -	2.0	\$ 660.00	2.0	\$ 660.00	100%
ba	Provide and Install 8-inch Male Cam-Lok	1	E.A.	\$ 432.000	\$ 432.00	0.0	\$ -	1.0	\$ 432.00	1.0	\$ 432.00	100%
bb	Provide and Install 8-inch Cam-Lok Protective Cover	1	E.A.	\$ 432.000	\$ 432.00	0.0	\$ -	1.0	\$ 432.00	1.0	\$ 432.00	100%
bc	Provide and Install 3-inch Poly Tank Fitting (Bulkhead)	2	E.A.	\$ 279.000	\$ 558.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
bd	Provide and Install 4-inch Poly Tank Fitting (Bulkhead)	7	E.A.	\$ 394.000	\$ 2,758.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
be	Provide and Install 6-inch Poly Tank Fitting (Bulkhead)	2	E.A.	\$ 597.000	\$ 1,194.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
bf	Provide and Install 2-inch Schedule 40 PVC Union	30	E.A.	\$ 165.000	\$ 4,950.00	0.0	\$ -	11.0	\$ 1,815.00	11.0	\$ 1,815.00	37%
bg	Provide and Install 4-inch Pipe Penetration Boot	2	E.A.	\$ 368.000	\$ 736.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
bh	Provide and Install 8-inch Pipe Penetration Boot	1	E.A.	\$ 521.000	\$ 521.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
bi	Provide and Install 2-Inch Flex Hose	32	L.F.	\$ 14.000	\$ 448.00	0.0	\$ -	18.0	\$ 252.00	18.0	\$ 252.00	56%
bj	Provide and Install 4-Inch Flex Hose	32	L.F.	\$ 20.500	\$ 656.00	0.0	\$ -	36.0	\$ 738.00	36.0	\$ 738.00	113%
bk	Provide and Install Eye Wash Station	2	E.A.	\$ 648.000	\$ 1,296.00	0.0	\$ -	2.0	\$ 1,296.00	2.0	\$ 1,296.00	100%
bl	Provide and Install 4-Inch FemaleThread Adaptor to Threaded Male Cam-Lock to PVC	11	E.A.	\$ 190.000	\$ 2,090.00	0.0	\$ -	16.0	\$ 3,040.00	16.0	\$ 3,040.00	145%
bm	Provide and Install 2-Inch FemaleThread Adaptor to Threaded Male Cam-Lock to PVC	5	E.A.	\$ 190.000	\$ 950.00	0.0	\$ -	34.0	\$ 6,460.00	34.0	\$ 6,460.00	680%
bn	Provide and Install 3/4-Inch Petcocks Brass	6	E.A.	\$ 178.000	\$ 1,068.00	0.0	\$ -	2.0	\$ 356.00	2.0	\$ 356.00	33%
bo	Provide and Install 8-Inch by 3/4-Inch PVC Tapping Saddle	6	E.A.	\$ 254.000	\$ 1,524.00	0.0	\$ -	2.0	\$ 508.00	2.0	\$ 508.00	33%
bp	Provide and Install 3-inch Flow Meter	5	E.A.	\$ 1,778.000	\$ 8,890.00	0.0	\$ -	5.0	\$ 8,890.00	5.0	\$ 8,890.00	100%
bq	Provide and Install 4-inch Flow Meter	1	E.A.	\$ 2,285.000	\$ 2,285.00	0.0	\$ -	1.0	\$ 2,285.00	1.0	\$ 2,285.00	100%



**TABLE 5.1**  
**2010 AND 2011**  
**CONSTRUCTION QUANTITIES AND COSTS**

Bid Item No.	BID TAB Description	Estimate Quantity	Units	Unit Price	Total Price	2010 Quantity	2010 Cost	2011 Quantity	2011 Cost	Total to Date Quantity	Total to Date Cost	Percent Completed
<b>9</b>	<b>Dewatering Control Building Piping, Valves, and Instrumentation (cont.)</b>											
br	Provide and Install 3-inch ANSI PVC Flange	10	E.A.	\$ 178.000	\$ 1,780.00	0.0	\$ -	10.0	\$ 1,780.00	10.0	\$ 1,780.00	100%
bs	Provide and Install 4-inch ANSI PVC Flange	2	E.A.	\$ 178.000	\$ 356.00	0.0	\$ -	10.0	\$ 1,780.00	10.0	\$ 1,780.00	500%
<b>10</b>	<b>Provide and Install Water Treatment System</b>											
a	Provide and Install Horizontal Screw Conveyor	1	L.S.	XXXXXXXX	\$ 38,100.00	0.0	\$ -	1.0	\$ 38,100.00	1.0	\$ 38,100.00	100%
b	Provide and Install 600 Gallon Lime Slurry Tanks	2	E.A.	\$ 25,400.000	\$ 50,800.00	1.8	\$ 45,720.00	0.20	\$ 5,080.00	2.0	\$ 50,800.00	100%
c	Provide and Install 3/4 HP Lime Slurry Mixers	2	E.A.	\$ 12,700.000	\$ 25,400.00	0.0	\$ -	2.0	\$ 25,400.00	2.0	\$ 25,400.00	100%
d	Provide and Install Tank Level Indicator	1	E.A.	\$ 12,700.000	\$ 12,700.00	0.0	\$ -	1.0	\$ 12,700.00	1.0	\$ 12,700.00	100%
e	Provide and Install Air Actuated Knife Valves	2	E.A.	\$ 6,348.000	\$ 12,696.00	0.0	\$ -	2.0	\$ 12,696.00	2.0	\$ 12,696.00	100%
f	Provide and Install 3-Gallon Air Compressor	1	L.S.	XXXXXXXX	\$ 2,539.00	0.0	\$ -	1.0	\$ 2,539.00	1.0	\$ 2,539.00	100%
g	Provide and Install 2 HP Lime Slurry Pump	1	E.A.	\$ 31,700.000	\$ 31,700.00	0.0	\$ -	1.0	\$ 31,700.00	1.0	\$ 31,700.00	100%
h	Provide and Install Dosing Tank and Stand	1	E.A.	\$ 15,200.000	\$ 15,200.00	0.9	\$ 13,680.00	0.1	\$ 1,520.00	1.0	\$ 15,200.00	100%
i	Provide and Install Dosing Tank Mixer	1	E.A.	\$ 12,700.000	\$ 12,700.00	0.0	\$ -	1.0	\$ 12,700.00	1.0	\$ 12,700.00	100%
j	Provide and Install pH Probe and Controller	4	E.A.	\$ 2,500.000	\$ 10,000.00	0.0	\$ -	4.0	\$ 10,000.00	4.0	\$ 10,000.00	100%
k (S)	Provide and Install RCTS-60HS	1	E.A.	\$ 190,500.000	\$ 190,500.00	0.9	\$ 171,450.00	0.1	\$ 19,050.00	1.0	\$ 190,500.00	100%
l	Provide and Install Lime Silo	1	L.S.	XXXXXXXX	\$ 76,200.00	0.0	\$ -	1.0	\$ 76,200.00	1.0	\$ 76,200.00	100%
m	Provide and Install Staircase and Platform	1	L.S.	XXXXXXXX	\$ 31,700.00	0.0	\$ -	1.0	\$ 31,700.00	1.0	\$ 31,700.00	100%
<b>11</b>	<b>Flocculant System</b>											
a	Provide and Install 200 Gallon Flocculant Mixing Tank	1	EA	\$ 11,400.000	\$ 11,400.00	0.0	\$ -	1.0	\$ 11,400.00	1.0	\$ 11,400.00	100%
b	Provide and Install 3/4 HP mixer	1	EA	\$ 12,700.000	\$ 12,700.00	0.0	\$ -	1.0	\$ 12,700.00	1.0	\$ 12,700.00	100%
c	Provide and Install Peristaltic Pump, Tubing, and PVC Pipe	1	L.S.	XXXXXXXX	\$ 11,400.00	0.0	\$ -	1.0	\$ 11,400.00	1.0	\$ 11,400.00	100%
<b>12</b>	<b>Water Treatment System Operation, Maintenance and Monitoring</b>											
a	Summer Operation, Maintenance, and Monitoring	15	30 Calendar Days	\$ 22,900.000	\$ 343,500.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
b	Winter Operation, Maintenance, and Monitoring	21	30 Calendar Days	\$ 24,100.000	\$ 506,100.00	0.0	\$ -	2.5	\$ 60,250.00	2.5	\$ 60,250.00	12%
c	Snow Removal	148	EA	\$ 190.000	\$ 28,120.00	0.0	\$ -	7.0	\$ 1,330.00	7.0	\$ 1,330.00	5%
d	Provide, Store, and Handle Anionic Flocculant	6	55-gallon drums	\$ 2,539.000	\$ 15,234.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
e	Provide, Store, and Handle Hydrated Lime Product	198	Tons	\$ 216.000	\$ 42,768.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%



**TABLE 5.1**  
**2010 AND 2011**  
**CONSTRUCTION QUANTITIES AND COSTS**

Bid	BID TAB	Estimate		2010				2011		Total to Date		Percent
Item No.	Description	Quantity	Units	Unit Price	Total Price	Quantity	Cost	Quantity	Cost	Quantity	Cost	Completed
<b>13</b>	<b>Maintenance of Major Equipment</b>											
a	Lime Screw Conveyor Shear Pins/Flex Coupling	1	EA	\$ 8,634.000	\$ 8,634.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
b	Lime Screw Coveyor Motor	1	EA	\$ 3,047.000	\$ 3,047.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
c	Lime Slurry and Dosing Tank Mixers	1	EA	\$ 6,095.000	\$ 6,095.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
d	Flocculant Tank Mixer	1	EA	\$ 6,095.000	\$ 6,095.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
e	Lime Slurry Pump	1	EA	\$ 14,100.000	\$ 14,100.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
f	Peristaltic Pump	1	EA	\$ 4,825.000	\$ 4,825.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
g	Peristaltic Pump Head Assembly	1	EA	\$ 2,412.000	\$ 2,412.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
h	Tank Level Indicators	1	EA	\$ 6,095.000	\$ 6,095.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
i	Influent Line 8" Flow Meter	1	EA	\$ 7,491.000	\$ 7,491.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
j	pH Probe and Controller	1	EA	\$ 6,095.000	\$ 6,095.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
k	RCTS-60 Motor	1	EA	\$ 2,793.000	\$ 2,793.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
l	5-HP Submersible Pump	1	EA	\$ 4,571.000	\$ 4,571.00	0.0	\$ -	0.5	\$ 2,285.50	0.5	\$ 2,285.50	50%
m	7-HP Submersible Pump	1	EA	\$ 5,079.000	\$ 5,079.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
n	1-HP Submersible Pump	1	EA	\$ 3,047.000	\$ 3,047.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
o	1.5-HP Submersible Pump	1	EA	\$ 3,047.000	\$ 3,047.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
p	2-inch Flow Meter	1	EA	\$ 3,809.000	\$ 3,809.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
q	3-inch Flow Meter	1	EA	\$ 3,174.000	\$ 3,174.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
r	4-inch Flow Meter	1	EA	\$ 3,682.000	\$ 3,682.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
s	Sediment Pond Sludge Removal	6	EA	\$ 44,400.000	\$ 266,400.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
t	Cleaning of IWT RCTS-60HS Unit	3	EA	\$ 1,905.000	\$ 5,715.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
<b>14</b>	<b>Construct, Operate and Maintain Phase II Dewatering System</b>								\$ -			
a	Construct, Operate, and Maintain Phase II Dewatering System	1	L.S.	XXXXXXXX	\$ 23,800.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%



**TABLE 5.1**  
**2010 AND 2011**  
**CONSTRUCTION QUANTITIES AND COSTS**

Bid	BID TAB	Estimate		2010		2011		Total to Date		Percent		
Item No.	Description	Quantity	Units	Unit Price	Total Price	Quantity	Cost	Quantity	Cost	Quantity	Cost	Completed
15	Stabilization /Dehydration of Mine Wastes											
a	Strip, load, Haul and Stockpile Cover Soils	48,128	C.Y.	\$ 7.000	\$ 336,896.00	11,262.0	\$ 78,834.00	12,620.0	\$ 88,340.00	23,882.0	\$ 167,174.00	50%
	Fuel Adjustment pay request #3 See attached fuel calculations	200		\$ 0.080		200.0	\$ 16.00			200.0	\$ 16.00	100%
	Fuel Adjustment pay request #4 See attached fuel calculations	4,800		\$ 0.100		4,800.0	\$ 480.00			4,800.0	\$ 480.00	100%
	Fuel Adjustment pay request #8 See attached fuel calculations	6,080.00		\$ 0.310				6,080.0	\$ 1,884.80	6,080.0	\$ 1,884.80	100%
b	Provide, Store, and Handle Quick Lime Product	13,400	TON	\$ 260.000	\$ 3,484,000.00	370.2	\$ 96,254.60	3,204.77	\$ 833,240.20	3,574.98	\$ 929,494.80	27%
	Fuel Adjustment pay request #3 See attached fuel calculations	127.93		\$ 1.460		127.9	\$ 186.78			127.93	\$ 186.78	100%
	Fuel Adjustment pay request #4 See attached fuel calculations	181.61		\$ 1.860		181.6	\$ 337.79			181.61	\$ 337.79	100%
	Fuel Adjustment pay request #5 See attached fuel calculations	60.67		\$ 2.610		60.7	\$ 158.35			60.67	\$ 158.35	100%
	Fuel Adjustment pay request #7 See attached fuel calculations	259.84		\$ 5.870				259.84	\$ 1,525.26	259.84	\$ 1,525.26	100%
	Fuel Adjustment pay request #8 See attached fuel calculations	972.79		\$ 5.530				972.79	\$ 5,379.53	972.79	\$ 5,379.53	100%
	Fuel Adjustment pay request #9 See attached fuel calculations	1,123.60		\$ 6.460				1,123.60	\$ 7,258.46	1,123.60	\$ 7,258.46	100%
	Fuel Adjustment pay request #10 See attached fuel calculations	848.54		\$ 7.040				848.54	\$ 5,973.72	848.54	\$ 5,973.72	100%
c	Stabilization of Tailings and Other Saturated Mine Wastes/Impacted Soils	168,915	B.C.Y.	\$ 22.500	\$ 3,800,587.50	11,154.0	\$ 250,965.00	38,000.0	\$ 855,000.00	49,154.0	\$ 1,105,965.00	29%
	Fuel Adjustment pay request #4 See attached fuel calculations	8,400.00		\$ 0.250		8,400.0	\$ 2,100.00			8,400.0	\$ 2,100.00	100%
	Fuel Adjustment pay request #5 See attached fuel calculations	2,754		\$ 0.340		2,754.0	\$ 936.36			2,754.0	\$ 936.36	100%
	Fuel Adjustment pay request #7 See attached fuel calculations	2,922		\$ 0.770				2,922.0	\$ 2,249.94	2,922.0	\$ 2,249.94	100%
	Fuel Adjustment pay request #8 See attached fuel calculations	11,865		\$ 0.730				11,865.0	\$ 8,661.45	11,865.0	\$ 8,661.45	100%
	Fuel Adjustment pay request #9 See attached fuel calculations	13,042		\$ 0.850				13,042.0	\$ 11,085.70	13,042.0	\$ 11,085.70	100%
	Fuel Adjustment pay request #10 See attached fuel calculations	10,171		\$ 0.930				10,171.0	\$ 9,459.03	10,171.0	\$ 9,459.03	100%
16	Excavate Repository and Stockpile Soil											
a	Excavate Repository and Stockpile Soil	60,400	B.C.Y.	\$ 5.000	\$ 302,000.00	47,600.0	\$ 238,000.00	23,596.0	\$ 117,980.00	71,196.0	\$ 355,980.00	118%
	Fuel Adjustment pay request #2 See attached fuel calculations	27,000		\$ 0.030		27,000.0	\$ 810.00			27,000.0	\$ 810.00	100%
	Fuel Adjustment pay request #3 See attached fuel calculations	5,500		\$ 0.070		5,500.0	\$ 385.00			5,500.0	\$ 385.00	100%
	Fuel Adjustment pay request #4 See attached fuel calculations	5,900		\$ 0.090		5,900.0	\$ 531.00			5,900.0	\$ 531.00	100%
	Fuel Adjustment pay request #5 See attached fuel calculations	9,200		\$ 0.130		9,200.0	\$ 1,196.00			9,200.0	\$ 1,196.00	100%
	Fuel Adjustment pay request #7 See attached fuel calculations	13,023		\$ 0.290				13,023	\$ 3,776.67	13,023.0	\$ 3,776.67	100%
	Fuel Adjustment pay request #8 See attached fuel calculations	10,045		\$ 0.270				10,045	\$ 2,712.15	10,045.0	\$ 2,712.15	100%
	Fuel Adjustment pay request #9 See attached fuel calculations	2,500		\$ 0.320				2,500	\$ 800.00	2,500.0	\$ 800.00	100%
	Fuel Adjustment pay request #10 See attached fuel calculations	-1,972		\$ 0.350				-1,972	\$ (690.20)	-1,972.0	\$ (690.20)	100%
b	Construct Earthen Dams	1	L.S.	XXXXXXXXX	\$ 20,300.00	1.0	\$ 20,300.00	0	\$ -	1.0	\$ 20,300.00	100%
c	Partially Backfill Existing Dry Channel	1	L.S.	XXXXXXXXX	\$ 35,800.00	1.0	\$ 35,800.00	0	\$ -	1	\$ 35,800.00	100%
17	Install Repository Cap											
a	Provide and Install Interim Cap	43,750	S.Y.	\$ 7.000	\$ 306,250.00	4,638.0	\$ 32,466.00	13,339.0	\$ 93,373.00	17,977.0	\$ 125,839.00	41%
b (S)	Provide and Install Geocushion	26,500	S.Y.	\$ 3.100	\$ 82,150.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
c (S)	Provide and Install HDPE Cap Liner	26,500	S.Y.	\$ 14.500	\$ 384,250.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
d (S)	Provide and Install Geocomposite Drainage Material	26,500	S.Y.	\$ 5.400	\$ 143,100.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
e	Install Repository Cover Soil Cap	25,000	C.Y.	\$ 9.800	\$ 245,000.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%



**TABLE 5.1**  
**2010 AND 2011**  
**CONSTRUCTION QUANTITIES AND COSTS**

Bid	BID TAB	Estimate				2010		2011		Total to Date		Percent
Item No.	Description	Quantity	Units	Unit Price	Total Price	Quantity	Cost	Quantity	Cost	Quantity	Cost	Completed
<b>18</b>	<b>Organic Amendment</b>											
a	Organic Amendment	6,818	Dry Tons	\$ 144.000	\$ 981,792.00	272.5	\$ 39,241.44	0.0	\$ -	272.51	\$ 39,241.44	4%
	Fuel Adjustment pay request #3 See attached fuel calculations	234.76		\$ 3.580		234.8	\$ 840.44	0.0	\$ -	234.76	\$ 840.44	100%
	Fuel Adjustment pay request #4 See attached fuel calculations	37.75		\$ 4.570		37.8	\$ 172.52	0.0	\$ -	37.75	\$ 172.52	100%
<b>19</b>	<b>Backfill Excavated Areas with Amended Cover</b>											
a	Backfill Excavated Areas with Amended Cover Soil	43,560	L.C.Y.	\$ 10.000	\$ 435,600.00	2,250.0	\$ 22,500.00	0.0	\$ -	2,250.0	\$ 22,500.00	5%
	Fuel Adjustment pay request #4 See attached fuel calculations	2,800.00		\$ 0.220		2,800.0	\$ 616.00	0.0	\$ -	2,800.0	\$ 616.00	100%
	Fuel Adjustment pay request #5 See attached fuel calculations	-1,500		\$ 0.300		-1,500.0	\$ (450.00)	0.0	\$ -	-1,500.0	\$ (450.00)	100%
<b>20</b>	<b>Stream Reconstruction</b>						\$ -					
a	Soda Butte Creek Reconstruction	1,475	L.F.	\$ 300.000	\$ 442,500.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
b	Miller Creek Reconstruction	525	L.F.	\$ 300.000	\$ 157,500.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
c	Soda Butte Creek Grade Control Structures	32	EA	\$ 4,004.000	\$ 128,128.00	1.0	\$ 4,004.00	0.0	\$ -	1.0	\$ 4,004.00	3%
d	Miller Creek Grade Control Structures	14	EA	\$ 4,200.000	\$ 58,800.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
e	Install Isolation Cofferdams	3	EA	\$ 8,533.000	\$ 25,599.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
f	Install Willow Fascines	400	L.F.	\$ 14.000	\$ 5,600.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
g	Install Willow Brush Layer	1,300	L.F.	\$ 12.500	\$ 16,250.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
h	Install Tree Boles with Root Wads	1	L.S.	XXXXXXXX	\$ 4,292.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
i	Install Log Grade Control Structures	2	EA	\$ 1,682.000	\$ 3,364.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
j	Install Log Wing Deflectors	3	EA	\$ 1,082.000	\$ 3,246.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
k	Backfill and Grade Former Soda Butte Creek Channel	1	L.S.	XXXXXXXX	\$ 21,900.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
l	Relocate East Bridge	1	L.S.	XXXXXXXX	\$ 44,400.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
m	Remove and Dispose of West Bridge	1	L.S.	XXXXXXXX	\$ 31,700.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
<b>21</b>	<b>Storm Water Control Systems</b>											
a	Construct Type 1 Grass Lined Channel	700	L.F.	\$ 65.000	\$ 45,500.00	208.0	\$ 13,520.00	0.0	\$ -	208.0	\$ 13,520.00	30%
b	Construct Type 2 Grass Lined Channel	380	L.F.	\$ 80.500	\$ 30,590.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
c	Construct Type 3 Grass Lined Channel	400	L.F.	\$ 59.500	\$ 23,800.00	400.0	\$ 23,800.00	0.0	\$ -	400.0	\$ 23,800.00	100%
d	Construct Type 3 Riprap Channel	10	L.F.	\$ 247.000	\$ 2,470.00	35.0	\$ 8,645.00	0.0	\$ -	35.0	\$ 8,645.00	350%
e	Construct Grouted Riprap Channel	120	L.F.	\$ 179.000	\$ 21,480.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%

**TABLE 5.1**  
**2010 AND 2011**  
**CONSTRUCTION QUANTITIES AND COSTS**

Bid		BID TAB		Estimate		2010		2011		Total to Date		Percent
Item No.	Description	Quantity	Units	Unit Price	Total Price	Quantity	Cost	Quantity	Cost	Quantity	Cost	Completed
21	Storm Water Control Systems											
f	Construct Storm Water Drain System	720	L.F.	\$ 63.000	\$ 45,360.00	66.0	\$ 4,158.00	652.0	\$ 41,076.00	718.0	\$ 45,234.00	100%
g	Construct Repository Grouted Riprap Lined V-Channel	710	L.F.	\$ 196.000	\$ 139,160.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
h	Construct RPP Lined Channel	190	L.F.	\$ 39.500	\$ 7,505.00	160.0	\$ 6,320.00	0.0	\$ -	160.0	\$ 6,320.00	84%
i	Install 36" HDPE Culvert	1	L.S.	XXXXXXXXX	\$ 6,873.00	1.0	\$ 6,873.00	0.0	\$ -	1.0	\$ 6,873.00	100%
j	Install 24" HDPE Culvert	1	L.S.	XXXXXXXXX	\$ 2,167.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
k	Install 36" inch Temporary HDPE/CMP Culvert	1	L.S.	XXXXXXXXX	\$ 7,387.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
22	Install Erosion Control Mat						\$ -					
a	Install Erosion Control Mat	8,100	S.Y.	\$ 4.400	\$ 35,640.00	6,461.0	\$ 28,428.40	0.0	\$ -	6,461.0	\$ 28,428.40	80%
23	Fertilize and Seed											
a	Upland Areas	31	AC	\$ 1,320.000	\$ 40,920.00	3.8	\$ 4,950.00	0.0	\$ -	3.75	\$ 4,950.00	12%
b	Riparian Areas (Streambanks)	0.8	AC	\$ 8,100.000	\$ 6,480.00	0.0	\$ -		\$ -	0.0	\$ -	0%
24	Mulch				\$ -							
a	Straw Mulch	26	AC	\$ 3,335.000	\$ 86,710.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
b	Hydromulch	5	AC	\$ 4,099.000	\$ 20,495.00	2.35	\$ 9,632.65	0.0	\$ -	2.35	\$ 9,632.65	47%
25	Plant Tree and Shrub Tubelings											
a	Plant Russet Buffaloberry Shrub Tubelings	600	EA	\$ 14.000	\$ 8,400.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
b	Plant Douglas-fir Tree Seedlings	400	EA	\$ 14.000	\$ 5,600.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
26	Install Construction BMPs						\$ -					
a (S)	Install Compost Filter Sox	1,800	L.F.	\$ 9.900	\$ 17,820.00	2,026.0	\$ 20,057.40	0.0	\$ -	2,026.0	\$ 20,057.40	113%
b	Install Stream Protection Structures	1,040	L.F.	\$ 12.000	\$ 12,480.00	936.0	\$ 11,232.00	0.0	\$ -	936.0	\$ 11,232.00	90%
c	Install Stone Check Dams	6	EA	\$ 443.000	\$ 2,658.00	6.0	\$ 2,658.00	0.0	\$ -	6.0	\$ 2,658.00	100%



**TABLE 5.1**  
**2010 AND 2011**  
**CONSTRUCTION QUANTITIES AND COSTS**

Bid Item No.	BID TAB Description	Estimate Quantity	Units	Unit Price	Total Price	2010 Quantity	2010 Cost	2011 Quantity	2011 Cost	Total to Date Quantity	Total to Date Cost	Percent Completed
<b>A-2</b>	<b>Excavate, Load, Haul, Stockpile, Scale and Transport Stabilized Tailings Materials to Off-Site Processing Facility</b>											
A-2a	Provide, Install and Remove Truck Scale	1	Construction Schedule	\$ 100,000.000	\$100,000.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
A-2b	Excavate, Load, Haul, Stockpile, and Transport Stabilized Tailings Materials to Off-Site Processing Facility	68,700	Ton	\$ 63.500	\$4,362,450.00	0.0	\$ -	0.0	\$ -	0.0	\$ -	0%
A-2c	Excavate, Load, Haul, Place and Compact Stabilized Tailings, Mine Wastes and Impacted Soils in the Repository	148,800	C.Y.	\$ 5.000	\$ 744,000.00	4,550.0	\$ 22,750.00	55,781.0	\$ 278,905.00	60,331.0	\$ 301,655.00	41%
	Fuel Adjustment pay request #4 See attached fuel calculations	4,000.00		\$ 0.110		4,000.0	\$ 440.00			4,000.0	\$ 440.00	100%
	Fuel Adjustment pay request #5 See attached fuel calculations	550		\$ 0.160		550.0	\$ 88.00			550.0	\$ 88.00	100%
	Fuel Adjustment pay request #6 See attached fuel calculations	4,373		\$ 0.130				4,373.0	\$ 568.49	4,373.0	\$ 568.49	100%
	Fuel Adjustment pay request #7 See attached fuel calculations	1,140		\$ 0.360				1,140	\$ 410.40	1,140.0	\$ 410.40	100%
	Fuel Adjustment pay request #8 See attached fuel calculations	7,075		\$ 0.340				7,075	\$ 2,405.50	7,075.0	\$ 2,405.50	100%
	Fuel Adjustment pay request #9 See attached fuel calculations	25,757		\$ 0.400				25,757	\$ 10,302.80	25,757.0	\$ 10,302.80	100%
	Fuel Adjustment pay request #10 See attached fuel calculations	17,436		\$ 0.430				17,436	\$ 7,497.48	17,436.0	\$ 7,497.48	100%
<b>TOTAL CONTRACT AMOUNT</b>				<b>\$</b>	<b>24,243,731.50</b>							

**CHANGE ORDERS**

						2010	2010	2011	2011			
1	Change Order #1	1	LS	\$ 24,912.600	\$ 24,912.60	1.0	\$ 24,912.60			1.0	\$ 24,912.60	100%
2	Change Order #2 - adjusted in 16, A2a, A2b, A2c											
2	Adjustment in QTY for Bid Item 16	27,400	C.Y.	\$ 5.000	\$ 137,000.00							
2	Adjustment in QTY for Bid Item A-2a	-1	Construction Schedule	\$ 100,000.000	\$ (100,000.00)							
2	Adjustment in QTY for Bid Item A-2b	-68,700	Ton	\$ 63.500	\$ (4,362,450.00)							
2	Adjustment in QTY for Bid Item A-2c	41,000	C.Y.	\$ 5.000	\$ 205,000.00							
3	Change Order #3	1	LS	\$ 1,890.000	\$ 1,890.00			1.0	\$ 1,890.00	1.0	\$ 1,890.00	100%
5	Change Order #5	1	LS	\$ 23,400.000	\$ 23,400.00			1.0	\$ 23,400.00	1.0	\$ 23,400.00	100%
6	Change Order #6	1	LS	\$ 92,520.000	\$ 92,520.00			1.0	\$ 92,520.00	1.0	\$ 92,520.00	100%

<b>TOTAL CONTRACT AMOUNT/PROGRESS WITH CHANGE ORDERS</b>	<b>\$ 20,274,926.59</b>	<b>\$ 3,913,628.01</b>	<b>\$ 4,140,363.27</b>	<b>\$ 8,053,991.28</b>	<b>40%</b>
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## **6.0 ANNUAL PROJECT COSTS**

The 2011 construction costs for the McLaren Tailings Abandoned Mine Site reclamation project was \$4,032,664.43. During the 2011 construction season there were 5 change orders issued that decreased the total contract amount by \$3,993,033.44.

The 2011 construction inspection and management costs were \$249,288.10.

## **7.0 POST 2011 CONSTRUCTION**

### **7.1 SITE CONDITIONS AFTER COMPLETION**

At the conclusion of the 2011 construction season the McLaren Tailings Abandoned Mine Site Reclamation Project is 39% completed. The dewatering control building, pumping wells and sediment detention pond are operating as described in the *Final Winter 2011 – 2012 Operations and Maintenance for the McLaren Tailings Abandoned Mine Site Cooke City, Montana* (DEQ/MWCB-Pioneer, 2011). Previously installed storm water controls, BMPs and interim caps are in-place to protect the construction work completed in 2011 and Soda Butte Creek from storm water runoff from the site.

### **7.2 MAINTENANCE OR FOLLOW-UP**

Any maintenance issues that occur will be incorporated into the 2012 construction activities. As part of the Winter Operations of the Dewatering Control Building, Contractor personnel will be on-site through the winter maintaining the site and building, conducting water sampling and completing snow removal. During January 2012, transducers are scheduled to be installed in the pumping wells at the site.

### **7.3 2011 AS-BUILT DRAWINGS**

Pioneer prepared the As-Built Drawings for the 2011 construction season. The As-Built Drawings were based on field survey data and field notes. The As-Built Drawings represent the site conditions after completing the 2011 construction season. The As-Built Drawings are provided in hard copy in Appendix K.



## 8.0 REFERENCES

- DEQ/MWCB-Pioneer, 1995. Montana Department of State Lands, Abandoned Mine Reclamation Bureau of Abandoned Hardrock Mine Priority Sites 1995 Summary Report. April 1995.
- DEQ/MWCB-Pioneer, 2002. Draft Final Expanded Engineering/Cost Analysis for the McLaren Tailings Abandoned Mine Site (EEE/CA). May 2002.
- DEQ/MWCB-Pioneer, 2009. Final Reclamation Design Report for the McLaren Tailings Abandoned Mine Site Cooke City, Montana. April 2009.
- DEQ/MWCB-Pioneer, 2011. Final Construction Completion Report for the McLaren Tailings Abandoned Mine Site February 2011).
- DEQ/MWCB-Pioneer, 2011. Final Winter 2011 – 2012 Operations and Maintenance for the McLaren Tailings Abandoned Mine Site Cooke City, Montana. November 2011.

**APPENDICES A THROUGH J ARE PROVIDED IN ELECTRONIC FORMAT  
ON THE ATTACHED CD**

**Appendix A Project Correspondence**

Appendix A-1 2011 Pre-Construction Conference Minutes  
Appendix A-2 Project Submittals  
Appendix A-3 Work Directives  
Appendix A-4 Substitutions

**Appendix B Contract Change Orders**

**Appendix C Payment Requests**

**Appendix D Daily Field Notes**

**Appendix E Laboratory Data**

Appendix E-1 Soil Proctor Results  
Appendix E-2 Compaction Results  
Appendix E-3 Field Water Quality Results  
Appendix E-4 Laboratory Water Quality Results

**Appendix F Project Information**

Appendix F-1 Quick Lime Scale Tickets  
Appendix F-2 ALLU Data Acquisition Controller (DAC)  
Appendix F-3 Perimeter Pumping Well Flows

**Appendix G Bi-Weekly Construction Progress Meeting Minutes**

**Appendix H Construction Daily Activity Reports**

**Appendix I Quality Control Reports**

**Appendix J Construction Photographs**