

C/007/0033
Task ID #4579

April 14, 2014

Sent via Email on April 14, 2014

Utah Division of Oil, Gas & Mining Coal Program (DOGMM)
1594 West North Temple, Suite 1210
P.O. Box 145801
Salt Lake City, Utah 84114-5801

Dear Permit Supervisor:

Subject: Intermountain Power Agency (IPA)
Permit Change for Proposed Oil Transloading Construction
Wildcat Loadout Facility, C/007/0033

Attached is an application to amend our DOGMM Permit C/007/0033 Wildcat Loadout Mining and Reclamation Plan. The amendments are in regards to the proposed construction and facilities associated with the oil transloading facility.

An electronic copy of all submittal materials have been sent to DOGMM via email to ogmcoal@utah.gov on April 14, 2014.

Please let us know if you have any comments once your staff has had the opportunity to review the enclosed information.

If you have any comments or questions, please contact me at (801) 748-1471.

Sincerely,



Lance C. Lee
Project Manager
Intermountain Power Project

cc: James A. Hewlett (via email)
Intermountain Power Agency
Minh T. Le (via email)
William W. Engels (via email)

APPLICATION FOR COAL PERMIT PROCESSING

Permit Change New Permit Renewal Exploration Bond Release Transfer

Permittee: Intermountain Power Agency (IPA)

Mine: _____

Permit Number: ACT 007/0033

Title: Oil Storage System

Description, Include reason for application and timing required to implement:

Crude Oil Storage System consisting of truck unloading, storage tanks and railcar loading

Instructions: If you answer yes to any of the first eight questions, this application may require Public Notice publication.

- Yes No 1. Change in the size of the Permit Area? Acres: _____ Disturbed Area: _____ increase decrease.
- Yes No 2. Is the application submitted as a result of a Division Order? DO# _____
- Yes No 3. Does the application include operations outside a previously identified Cumulative Hydrologic Impact Area?
- Yes No 4. Does the application include operations in hydrologic basins other than as currently approved?
- Yes No 5. Does the application result from cancellation, reduction or increase of insurance or reclamation bond?
- Yes No 6. Does the application require or include public notice publication?
- Yes No 7. Does the application require or include ownership, control, right-of-entry, or compliance information?
- Yes No 8. Is proposed activity within 100 feet of a public road or cemetery or 300 feet of an occupied dwelling?
- Yes No 9. Is the application submitted as a result of a Violation? NOV # _____
- Yes No 10. Is the application submitted as a result of other laws or regulations or policies?

Explain: _____

- Yes No 11. Does the application affect the surface landowner or change the post mining land use?
- Yes No 12. Does the application require or include underground design or mine sequence and timing? (Modification of R2P2)
- Yes No 13. Does the application require or include collection and reporting of any baseline information?
- Yes No 14. Could the application have any effect on wildlife or vegetation outside the current disturbed area?
- Yes No 15. Does the application require or include soil removal, storage or placement?
- Yes No 16. Does the application require or include vegetation monitoring, removal or revegetation activities?
- Yes No 17. Does the application require or include construction, modification, or removal of surface facilities?
- Yes No 18. Does the application require or include water monitoring, sediment or drainage control measures?
- Yes No 19. Does the application require or include certified designs, maps or calculation?
- Yes No 20. Does the application require or include subsidence control or monitoring?
- Yes No 21. Have reclamation costs for bonding been provided?
- Yes No 22. Does the application involve a perennial stream, a stream buffer zone or discharges to a stream?
- Yes No 23. Does the application affect permits issued by other agencies or permits issued to other entities?
- Yes No 24. Does the application include confidential information and is it clearly marked and separated in the plan?

Please attach three (3) review copies of the application. If the mine is on or adjacent to Forest Service land please submit four (4) copies, thank you. (These numbers include a copy for the Price Field Office)

I hereby certify that I am a responsible official of the applicant and that the information contained in this application is true and correct to the best of my information and belief in all respects with the laws of Utah in reference to commitments, undertakings, and obligations, herein.

JAMES A. HEWLETT Gen. Mgr. 4-14-14 [Signature]
 Print Name Position Date Signature (Right-click above choose certify then have notary sign below)

Subscribed and sworn to before me this 14th day of April, 2014

Notary Public: Michelle R. Miller, state of Utah.

My commission Expires: 8-30-2015
 Commission Number: 613249
 Address: 10653 So. Riverfront Parkway, Suite 100
 City: S. Jordan State: UT Zip: 84095



<p>For Office Use Only:</p>	<p>Assigned Tracking Number:</p>	<p>Received by Oil, Gas & Mining</p>
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CHAPTER 1, LEGAL

R645-301-100. GENERAL

Marlin Logistics, LLC(Marlin) in 2014, is building a crude oil unloading station, storage system, and railcar loading stations on the west side of the Utah Railroad tracks. This operation will be located on the west side of the Wildcat Coal Loading Facility. According to UDOGM, this facility will not be under their jurisdiction, but will be located within the Wildcat Loadout permit area. Items pertaining to this operation are addressed in Chapter 9 of the M&RP.

R645-301-110. LEGAL, FINANCIAL, AND COMPLIANCE INFORMATION

Legal, Financial, Compliance and Information

The objective of this chapter is to set forth all relevant information concerning ownership and control of Intermountain Power Agency, the ownership and control of the property to be affected by mining activities and all other information and documentation required.

Compliance Information

a) Suspension and Revocation

Intermountain Power Agency, affiliates or persons controlled by or under common control with Intermountain Power Agency never had a mining permit suspended or revoked.

b) Forfeiture of Bond

Intermountain Power Agency, affiliates or persons controlled by or under common control with Intermountain Power Agency have not forfeited a mining bond or similar security in lieu of bond.

c) History of Violations

Intermountain Power Agency and affiliated companies have not received any violations received within the last three years prior to the date of this application. See attached amended and restated Appendix B Part B.

R645-301-111. INTRODUCTION

Introduction and Overview of Project Permit Application

A. Introduction

This permit application is being submitted by Intermountain Power Agency, in order that coal can be stored and loaded out of its coal loadout facility located at

Wildcat Junction, near Helper, Utah. This facility is known as the Wildcat Loadout. Intermountain Power Agency is a political subdivision of the State of Utah. Intermountain Power Agency has a permit to operate its coal loading and storage facility known as Wildcat Loadout, in accordance with the appropriate regulations. This coal loadout facility is located on land owned by the United States of America in Carbon County, Utah.

Intermountain Power Agency was granted the right-of-way in August, 2011, by the Bureau of Land Management of the United States Department of the Interior.

R645-301-200. SOILS

HISTORICAL NOTE: In 2004, the Division issued an Order DO-04 for wind-blown fines which had accumulated outside the disturbed area, primarily in the area southwest of the main coal storage pile below sediment Pond B. A complete description of the mitigation plan proposed for DO-04 is included in Appendix P.

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I. Soil Survey and Vegetation Inventory (please see Appendix D, Appendix D Supplement, and Appendix I).

1. Introduction

Appendix D is a survey conducted by the SCS in the Wildcat area and depicts the major soil types here. Appendix D also includes a survey including sampling as performed by Earl Jensen consulting as a soil scientist. Included in this survey is a soil profile description for each soil type identified on the permit area. Plate 11 depicts the soils as outlined by the Order 3 Survey performed by the SCS.

R645-301-211. PREMINING SOIL RESOURCES

The entire disturbed area, with the exception of approximately 20 acres, was disturbed pre-law by previous owners, and no topsoil was saved.

Topsoil was removed prior to construction in 1984, and stored and protected for use in final reclamation. Please see Plate 13C for a summary of stored topsoil. Appendix D also includes a topsoil mass balance and

includes soil quality data from the Utah State University Testing Laboratory. The mass balance indicates that there may not be sufficient volume of topsoil for final reclamation. IPA has committed to identifying and testing for suitable substitute material either off the permit area or possibly within

CHAPTER 3, BIOLOGY

HISTORICAL NOTE: In 2004, the Division issued an Order DO-04 for wind-blown fines which had accumulated outside the disturbed area, primarily in the area southwest of the main coal storage pile below sediment Pond B. A complete description of the mitigation plan proposed for DO-04 is included in Appendix P.

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R645-301-300. BIOLOGY

R645-301-310. INTRODUCTION

Vegetation Information

Introduction

An intensive detailed vegetation survey was not required or performed for the BLM Right-of-Way prior to the construction of this facility. It was a sagebrush/grass lowland with a Pinyon-Juniper community to the west. The following letter, shows the two reference areas identified by the SCS which show the general vegetative types in the area. Although the SCS identified these two areas, a third area was chosen by the Division of Oil, Gas, and Mining and Andalex Resources and is shown on Plate 1. A detailed vegetation inventory has been performed for Andalex by a qualified range scientist on this third reference area and is included in this document as Appendix I. This inventory will be the basis for a seed mixture to be used during reclamation. Please note that although the SCS identified two reference areas, the reference area being used for this MRP was designated by DOGM and Andalex for use during reclamation.

Description

(Also R645-301-311, 320 and 321)

CHAPTER 4, LAND USE & AIR QUALITY

HISTORICAL NOTE: In 2004, the Division issued an Order DO-04 for wind-blown fines which had accumulated outside the disturbed area, primarily in the area southwest of the main coal storage pile below sediment Pond B. A complete description of the mitigation plan proposed for DO-04 is included in Appendix P.

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R645-301-400.

LAND USE AND AIR QUALITY

R645-301-410.

LAND USE

R645-301-411.

ENVIRONMENTAL DESCRIPTION

Because of the vegetation and poor rainfall, the land is presently used only for grazing, wildlife habitat, and limited outdoor recreation. Historically, the land has also been used for coal loading.

R645-301-411.100.

PREMINING LAND USE INFORMATION

Past mining in the vicinity of Wildcat includes ARCO'S Beaver Creek Mines (ten miles to the west). The Swisher Coal Company previously used the Wildcat Siding.

R645-301-411.110.

USES OF THE LAND AT THE TIME OF FILING APPLICATION

The Wildcat Loadout area would fall into two land use categories: 1) Fish and Wildlife habitat and recreation lands, and 2) Range Lands. County zoning regulations (1974) indicate all lands involved in the lease application area are within Zone M and G1 which is for mining and grazing. Current land use consists of grazing, wildlife habitat, and deer hunting. No other game species are found in the area. For recreational purposes, the land is suitable for deer hunting as well as ATV riding and occasionally snowmobiling. There are no oil and gas wells or water wells.

CHAPTER 5, ENGINEERING

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R645-301-500. ENGINEERING

R645-301-510. INTRODUCTION

Volume II of this PAP contains plates which support the narrative of Volume I. These maps include, but are not limited to, contiguous surface and subsurface owners, the permit boundary including the area to be affected over the life of the project, a plate depicting all buildings and structures within 1,000 feet of the permit area and any surface or subsurface man-made features (powerline). Much of this information is combined on individual maps, e.g., the man-made features are on Plate 1 which also depicts buildings within 1,000 feet.

The location and boundaries of the revegetation reference area are shown on Plate 1.

Figure VII-2 depicts surface waters and receiving waters in the vicinity of the permit area. The Gordon Creek Road (County Road 139) is also depicted as it relates to the permit area on the surface facilities map.

Cross Sections, Maps, and Plans

(Also R645-301-511, 521.140, 521.150, 521.160, 521.170, 521.180 and R645-301-722)

Many of the plans of this section are not applicable to the Wildcat Loadout Facility as it is strictly a surface facility and plans showing core samples, nature of coal seams, outcrops, active underground and abandoned workings or any others pertaining to mining (surface or underground) are not included.

CHAPTER 6, GEOLOGY

HISTORICAL NOTE: In 2004, the Division issued an Order DO-04 for wind-blown fines which had accumulated outside the disturbed area, primarily in the area southwest of the main coal storage pile below sediment Pond B. A complete description of the mitigation plan proposed for DO-04 is included in Appendix P.

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R645-301-600.

GEOLOGY

R645-301-610.

INTRODUCTION

R645-301-611.

GENERAL REQUIREMENTS

R645-301-611.100.

GEOLOGY WITHIN AND ADJACENT TO THE PERMIT AREA

Introduction

The Wildcat Loadout is in the Gordon Creek area of the Wasatch Plateau which is one of the major physiographic features in the region. The plateau rises from a base at approximately 6,000 feet in elevation to over 9,000 feet.

Spring Canyon and Ford Ridge (Forge Mountain) are the major topographic features of the area. The Price River Canyon and Spring Canyon are the major area drainages.

Geologic Setting (Stratigraphy and Structure)

The permit area sits on the Masuk Member of the Mancos Shale. The Mancos Shale in this area is in excess of 5,000 feet thickness. The Mancos Shale in the area is mainly dark bluish, gray shale which becomes sandy towards the top.

The oldest unit of the Mesa Verde Group is the Star Point Sandstone. It lacks coal and consists of three sandstone tongues. The beds of sandstone range in thickness from one to ten feet in most parts. The Mesa Verde Group immediately

CHAPTER 7, HYDOLOGY

HISTORICAL NOTE: In 2004, the Division issued an Order DO-04 for wind-blown fines which had accumulated outside the disturbed area, primarily in the area southwest of the main coal storage pile below sediment Pond B. A complete description of the mitigation plan proposed for DO-04 is included in Appendix P.

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R645-301-700. HYDROLOGY

R645-301-710. INTRODUCTION

It should be noted that the entire sedimentation and control plan, including impoundments, diversions and *reclamation hydrology* are discussed in *Appendix R, Sedimentation and Drainage Control Plan.*

R645-301-711. GENERAL REQUIREMENTS

See Sections R645-301-711.100 through R645-301-711.500

R645-301-711.100. EXISTING HYDROLOGIC RESOURCES

Existing Groundwater Resources

Regional Groundwater Hydrology

The groundwater resources of the Wasatch Plateau have not been studied to any great extent. The region has been characterized generally as one of regional groundwater recharge.¹ The lithologic nature of the upper cretaceous strata generally makes them unsuitable as significant aquifers. Much of the precipitation that falls in the Wasatch Plateau is removed by overland flow and evapotranspiration. The water that does enter the ground moves only short distances before discharging as springs and seeps, generally in the higher elevation areas. The regional water table is probably several hundred feet below the surface,¹ and probably coincides with the bottoms of the major streams, i.e., Price River.

¹Price and Arnow, 1974

CHAPTER 8, BONDING

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R645-301-800. BONDING AND INSURANCE

IPA currently holds a bond, calculated and approved by the Division, in the amount of \$1,144,000. This bond, and all supporting calculations, is included in this MRP in Appendix B, Part D.

It should be noted that only major headings and information specific to the IPA Wildcat Bond and Insurance are included in this chapter. If a major heading is noted "N/A" or "By Division" all subsequent headings in that series are also assumed "N/A" or "By Division".

R645-301-810. BONDING DEFINITIONS AND DIVISION RESPONSIBILITIES

BY DIVISION

R645-301-820. REQUIREMENT TO FILE A BOND

IPA currently holds a bond, approved by UDOGM in the amount of \$1,144,000 and it is included in this MRP in Appendix B, Part D.

R645-301-830. DETERMINATION OF BOND AMOUNT

The bond amount has been determined through joint effort by IPA and the Division. The present amount of bond is \$1,144,000.00. Complete calculations are included in Appendix B, Part D. Bonded areas (disturbed areas) are shown on Plates 1 and 1B and further described in R645-301-542

INTERMOUNTAIN POWER AGENCY

WILDCAT LOADOUT

MINING AND RECLAMATION PLAN

CHAPTER 9, OIL STORAGE

CHAPTER 9

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R645-301-100 GENERAL

This chapter is being submitted by Intermountain Power Agency, in order that a crude oil unloading, storage, and railcar loading systems can be installed on the west side of the Wildcat coal loading facility.

The crude oil facility will be operated by Marlin Logistics, LLC (Marlin). The resident agent is:

Brian Hess
General Manager
121 West 200 South
Farmington, Utah 84025
(801) 386-1861

Managers of the crude oil handling facilities are as follows:

<u>Name</u>	<u>Address</u>	<u>Title</u>	<u>Date Position Assumed</u>
General Manger			
Brian Hess	121 West 200 South Farmington, UT 84025	General Manager	July, 2012
Site Manager			
Scott Dimick		Site Manager	Feb. 2014

R645-301-200 SOILS

The crude oil facility is located in a previously disturbed area and will not require any removal of topsoil or subsoils as part of the construction or operational activities.

R-645-301-300 BIOLOGY

The vegetation types in the surrounding areas of the crude oil facilities are Pinyon-Juniper and Sagebrush-Grass. Refer to Chapter 3 of the M&RP for more details on plants communities.

There are no know threatened or endangered species within the crude oil facility based upon previous studies of the area.

The crude oil facility is partially located within crucial winter habitat for Rocky Mountain elk and for mule deer.

R645-301-400 LAND USE

The crude oil facility area will fall into two land use categories: 1) Fish and Wildlife habitat and recreation lands, and 2) Range Lands. County zoning regulations indicate all lands involved in the crude oil facility area are within Zone M and GI which is for mining and grazing. Current land use consists of grazing, wildlife habitat, and deer hunting. For recreational purposes, the land is suitable for deer hunting as well as ATV riding and occasionally snowmobiling.

A reconnaissance survey has been conducted of the existing area to assure that no archaeological or historical sites exist within the area. The results of the survey can be found in the *Confidential Binder* of the M&RP.

A reconnaissance survey has been conducted of the area where the oil storage facility will be constructed and the area for the dam and diversion ditch to direct undisturbed runoff around the oil storage facility. The results of the survey can be found in a report sent to the Bureau of Land Management, Price Field Office.

R645-301-500 ENGINEERING

Overview of Project

General Description

The Wildcat Loadout facility is centrally location for transporting oil from Central Utah and the Uintah Basin.

The unloading, storage, and loading of crude oil are designed to reduce chance of leaks and spills from degrading the area.

Summary Description

Storage Tanks

Four storage tanks with a combined capacity of approximately 250,000 barrels are used for crude oil storage. Two of the tanks will have a storage capacity of 100,000 barrels. These tanks will have a diameter of 146 feet and will be approximately 40 feet in height. Two of the tanks will have a storage capacity of 20,000 barrels. These tanks will have a diameter of 70 feet and will be approximately 32 feet in height. Each tank will have a sealed floating roof to prevent the escape of vapors. Each tank will contain coils for heating the oil during storage. The tanks will set on concrete foundations and pads.

The pads under the tanks will have open notches radiating from the center of the pad, each leading to the outside diameter of the tank to help detect bottom leaks of the tanks.

Fire Suppression

A 5,000 gallon tank containing water with foam injection capabilities will be connected by pipe and pumped to the tank roof to provide fire suppressant. Pipes will have a connecting valve outside the containment berm to allow suppressant from tank trucks.

Truck Unloading

Four truck unloading lanes will be using the existing roadways within the facility. Truck unloading racks will be adjacent to the unloading lanes. Four and six inch piping and fixed pumps will be used to transfer the tanker truck oil to the storage tanks through a closed system. This will prevent vapors from escaping. The fixed pumps will have 50 and 100 horsepower motors that are approximately 20 inches wide and 48 inches tall.

Railcar Loading

Mobile pump stations will be used to transfer oil from storage tanks to railcars through a closed system to prevent vapors from escaping. This closed system will consist of four and six inch pipes. All piping will be of steel construction and will be above ground, where feasible.

Vapor Combustor

A smokeless, natural draft, air assisted and enclosed vapor combustor will be installed to combust any vapors generated during the loading process as required by the Utah Department of Environmental Quality. Two inch vapor vent manifold piping will be installed from each railcar station to the combustor where the vapors will be destroyed to 98 percent destruction efficiency. The combustor will be approximately three (3) feet in diameter and 20 feet tall utilizing propane for the pilot and assist gas.

Substation

A 46 KV to 12.45 KV 3 MVA transformer substation will be located adjacent to the southeast corner of the existing warehouse fence.

Yard Power

Two 12.45 KV feeds will leave the substation. One feed will be to a 12.45 KV to 480 V 500 KV transformer and will be used to supply power to two buildings. The second feed will be to a 12.75 KV to 480 v 2.5 KV transformer and will be used to supply power to control building.

Yard Lighting

Approximately twelve light posts will be use at the truck unloading lanes, tank area and railcar loading tracks. The lighting fixtures will be cut-off design to cast light downward and minimize light pollution.

Office

10' x 40' trailer will be used as an office.

Diesel Fuel Tank

A 10,000 gallon fully enclosed diesel fuel tank will be used to fuel both truck and equipment.

Construction

Construction began in the spring of 2014 and will be completed in the fall of 2014. Construction will be located and carried out so as to prevent and control erosion, siltation, water pollution, and damage to property in accordance with the regulations.

All facilities have been designed and constructed and will be maintained and used in a manner which prevents damage to wildlife and related environmental values (particularly as this relates to power line structures, regarding Fish and Wildlife).

Marlin will maintain all facilities in a manner which prevents additional contributions of suspended solids outside the permit area. All activities shall be conducted in a manner which minimizes damage to railroads, electric and telephone lines, and water and sewage lines, which pass over or through the permit area. Marlin realizes that maintenance of the facilities is a key to optimum operation. Constant upkeep of all surface facilities and structures has resulted in their maintaining their excellent condition.

Construction Methods

Major Equipment

Excavations for foundations will be accomplished with backhoes and trackhoes. Leveling was required at the tank site; however, cut and fill was not implemented to a large degree because the area is relatively flat.

All surface pads will be stabilized and all other disturbed areas (pond embankments, other slopes, etc.) will be reseeded. Where possible, a rangeland seed drill will be used.

Maps

Crude oil unloading, storage, and railcar loading areas are all depicted on the surface facilities map, Plate 1.

Reclamation

Reclamation will be uncomplicated since this area is flat lying and topographically simple. All disturbed areas no longer required for the conduct of operations will be immediately revegetated. In the future, any areas no longer required for operations, will also be immediately revegetated.

Before buildings and final site preparation is completed, the topsoil was removed and revegetated to prevent erosion.

When the project is expired, perhaps in 20 years, extraneous material will be removed. Roads will be regraded and using the most advanced technology at the time, IPA will re-establish the terrain to as near the original contour as practical.

Reclamation Timetable

Reclamation will be accomplished in two phases. Phase I will commence immediately after the project has expired. Phase I involves the majority of the reclamation steps. It will bring the site to near the original contour as practical with the exception of sedimentation ponds which will be left in place until revegetation has been determined complete. Prior to revegetation being complete, there is a possibility for runoff accumulating a sediment load, within the disturbed area.

The ponds left in place will prevent this runoff from leaving the disturbed area. Once the vegetation has been established which will probably take a minimum of two years, Phase II of the reclamation will commence. This phase involves the removal of the sediment ponds which were left, regrading, and revegetating these areas, and finally, IPA's commitment to monitoring.

Phase I

The first step will be to remove structures. Since none of the structures will remain on site, this will be the largest part of the Phase I effort and will also be the most expensive. The following is a list of structures which will be brought down and removed either complete or as scrap/salvage.

1. 2 Oil Storage Tanks (100,000 barrels each)
2. 2 Oil Storage Tanks (20,000 barrels each)
3. 5,000 Gallon Water Tank
4. 4 Truck Unloading Stations
5. Vapor Combustor
6. 12 Light Posts
7. 46KV to 12.47KV Substation
8. Piping
9. Railcars Loading Stations
10. Office Trailer
11. Diesel Fuel Tank

Once the structures have been removed, then the recontouring and regrading portion will commence. It is anticipated that the structure removal will take approximately six months to complete so at this point. The recontouring would primarily involve the primary and secondary roads, the oil storage area, and unloading and loading areas. The undisturbed diversion west of the facility would become permanent at this point and would be capable of passing a 100 year precipitation event. The original natural drainage could not be restored because of the Utah Railroad. This natural drainage has been either blocked or diverted for the last 30 years by predecessors to IPA and/or Marlin Logistics, LLC.

R645-301-600 GEOLOGY

There are no changes in geology. Refer to Chapter 6, Geology of the M&RP for discussion on this subject.

R645-301-700 HYDROLOGY

The runoff from this area has always drained from the west of the railroad tracks to the east side using culverts under the tracks. Ditches intercepted the water at the culverts and divert the water to sediment pond and out of the ponds into natural drainage washes. With the construction of the crude oil storage facility and the possibility of leakage occurring the culverts under the tracks were either plugged or covered.

The hydrology for the crude oil storage facility was re-evaluated to determine the amount of runoff from undisturbed and disturbed areas above and within the site. To provide the maximum protection from potential events, a 100 year-24 hour storm event was used for these calculations. The precipitation event from this storm is 2.37 inches. This information was taken from NOAA Atlas 14, Volume 1, Version 5 for the Price Warehouse. SEDCAD Version 4 was used for these calculations.

The runoff from the different areas will either be handled by the construction of new structures or the use of existing structures. Four new structures will be construction. The first two structures will be a dam and a diversion ditch. These two structures will be to the west of the facility and designed to divert the majority of the undisturbed runoff around the facility to Garley Wash. The Upper and Lower cells are existing sediment ponds and will be used to contain the runoff from the rest of the undisturbed area from entering the facility.

Two new retention ponds will be constructed to capture the runoff from the site. These two ponds will be lined with either clay or a high density polyethylene liner to prevent the contaminated water from infiltrating into the ground. The hydrology calculations can be found in Appendix A, MARLIN LOGISTICS, LLC OIL STORAGE HYDROLOGY PLAN.

R645-301-800 BONDING

The crude oil facility is not related to coal handling operations and the facility will not be in DOGM's regulations. There will no change to the Bond Insurance already provide by IPA. The bonding action will be covered by a different agency.

APPENDIX A
MARLIN LOGISTICS, LLC
OIL STORAGE HYDROLOGY PLAN

ASSOCIATED ENERGY SERVICES (AES)
HYDROLOGY REPORT
PRICE RAILCAR TRANSLOADING FACILITY
CONSUMERS ROAD (CARBON COUNTY)

Prepared For:
Brian Hess-AES

February 2014

Prepared By:



EIS Environmental & Engineering Consulting
31 North Main Street
Helper, Utah 84526

INTRODUCTION

The purpose of this report is to address water issues at the Wildcat Loadout that pertains to the Associated Energy Services Price Railcar Transloading Facility (AES). Intermountain Power Agency (IPA) is the present lease holder of the Bureau of Land Management (BLM) Wildcat Loadout Lease. IPA is proposing to modify their existing lease to allow AES to expand their oil transloading operations beyond the Utah Railroad ROW. This expansion requires that existing water issues at the Wildcat Loadout be addressed. AES is expanding their operation to the west side of the Wildcat Loadout. This expansion will be limited to the area west of the Utah Railroad tracks.

In recent times, runoff waters on the west side of the property have been controlled by two sediment ponds referred to as the Upper & Lower Cell. Additional water not contained by the Upper & Lower Cell was diverted to an area referred to as the Depression Area. The Depression Area is where a large portion of the expansion operation will be located. Four large oil storage tanks contain over 10,000,000 gallons of oil will be located in this area.

The purpose of this hydrology report is to minimize the amount of runoff water that will report to the proposed oil tank location. This report will also show the size of two new ponds that will be required to prevent water from leaving this site. These ponds are to satisfy the Division of Water Quality requirement of preventing any water containing oil from leaving the site.

SCOPE OF WORK

There is a small drainage area (79.55 acres) west of AES's proposed oil loading facilities, refer to the drawing Diversion Ditch Drainage Area located in Appendix 1. This drainage area contributes the greatest amount of runoff water to the proposed construction site. Other Drainage Areas 1,2, and 3 are shown on drawing Drainage Areas 1, 2, & 3 is located in Appendix 1, and also contribute runoff water to this site.

To provide the maximum protection from potential runoff events, a 100 year-24 hour storm event was used for these calculations. The precipitation event from this storm is 2.37 inches. This information was taken from NOAA Atlas 14, Volume 1, Version 5 for the Price Warehouses. The computer program used for these calculations was SEDCAD 4.

The runoff calculations for the Diversion Ditch Drainage Area, Drainage Area #1, Drainage Area #2, Diversion Area #3, and the Existing Wildcat Loadout Permanent Impoundments (Upper & Lower Cells) are shown in Appendix 3.

The Upper and Lower cells are existing sediment ponds that help contain runoff water coming off of the undisturbed drainage from getting onto the facility. Excess water that these two ponds cannot handle, was collected west of the Utah Railway tracks in an area

that DOGM refers to as the Depression Area. This Depression Area is where the new storage tanks are proposed to be located. The purpose of this Hydrology Report was to divert water away from the Depression Area.

Runoff Calculations

The runoff calculations for the various areas are listed in the following table.

Area	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
Diversion Ditch	36.57	2.83
Drainage Area #1	4.95	.773
Drainage Area #2	3.54	.25
Drainage Area #3	1.59	.13

Retention Pond Capacity

The retention size of the new and existing ponds are listed in the following table.

Pond	Capacity (ac-ft)	Size	Depth
Pond #1	.849	50' x 120'	9.0'
Pond #2	.157	50' x 50'	4.0'
Upper Cell (1)	.437	App. 60' x 110'	3.8'
Lower Cell (1)	1.114	App. 120' x 140'	2.3'

(1) Sediment from pond needs to be removed to obtain these capacities.

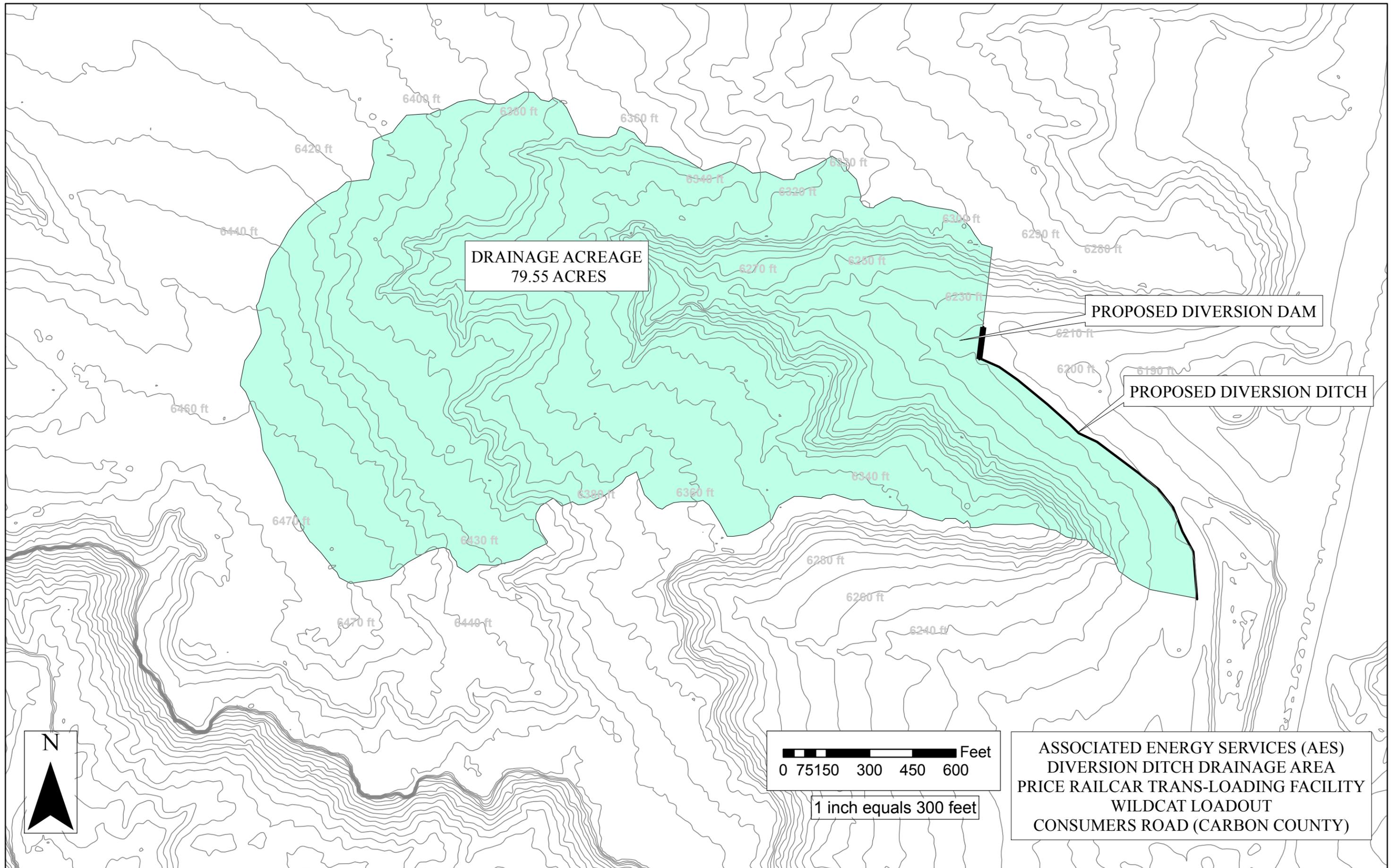
CONCLUSION

The proposed Diversion Ditch will remove the majority of runoff water from the proposed construction site. Refer to Appendix 4 for the details on the diversion dam and ditch. This water will be diverted to another existing channel of Garley Wash. This finger of Garley Wash is located just south of the coal loadout bin where a 36" culvert diverts water under the Utah Railway tracks.

Water from Drainage Area #1 will be collected by Pond #1. This pond will be lined with clay or a high density polyethylene liner. Water from Drainage Area #2 will be collected by existing ponds (Upper & Lower Cells). These two cells should have sediment removed to get back to their original capacities. These two ponds will not be lined because they receive uncontaminated water from an undisturbed area. Water from Drainage Area #3 will be collected by Pond #2. This pond will also be lined with clay or a high density polyethylene liner.

APPENDIX 1

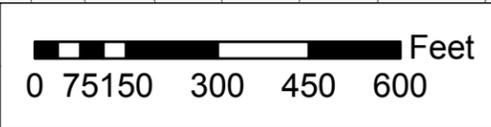
DIVERSION DITCH DRAINAGE AREA DRAWING
&
DRAINAGE AREA 1, 2, AND 3 DRAWINGS



DRAINAGE ACREAGE
79.55 ACRES

PROPOSED DIVERSION DAM

PROPOSED DIVERSION DITCH



1 inch equals 300 feet

ASSOCIATED ENERGY SERVICES (AES)
DIVERSION DITCH DRAINAGE AREA
PRICE RAILCAR TRANS-LOADING FACILITY
WILDCAT LOADOUT
CONSUMERS ROAD (CARBON COUNTY)

ASSOCIATED ENERGY SERVICES (AES)
DRAINAGE AREAS 1, 2, & 3
PRICE RAILCAR TRANS-LOADING FACILITY
WILDCAT LOADOUT
CONSUMERS ROAD (CARBON COUNTY)

PROPOSED DIVERSTION DITCH

PROPOSED DIVERSION DAM

DRAINAGE AREA # 2
7.11 ACRES

EXISTING DIVERSTION DITCH

UPPER CELL
IMPOUNDMENT POND

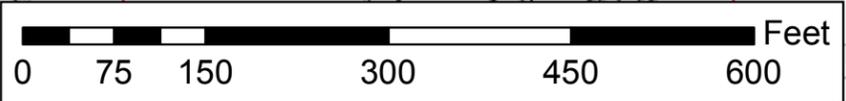
LOWER CELL
IMPOUNDMENT POND

DRAINAGE AREA # 1
10.35 ACRES

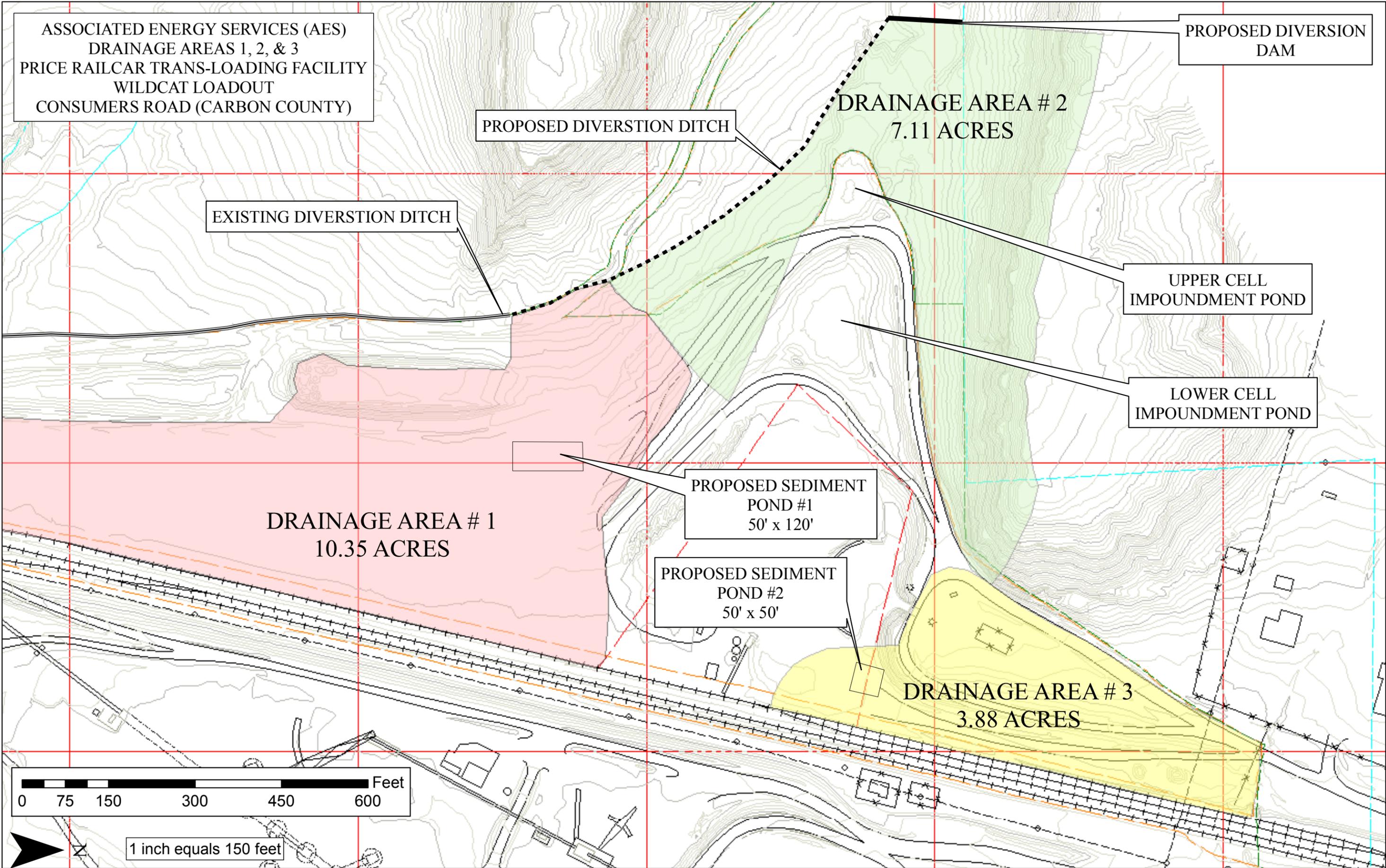
PROPOSED SEDIMENT
POND #1
50' x 120'

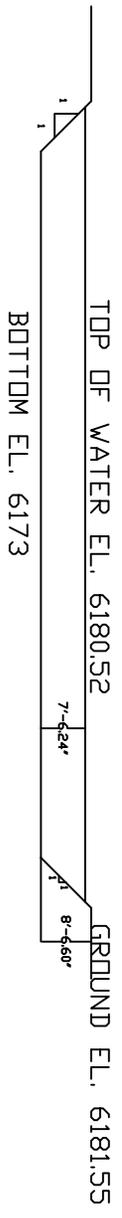
PROPOSED SEDIMENT
POND #2
50' x 50'

DRAINAGE AREA # 3
3.88 ACRES

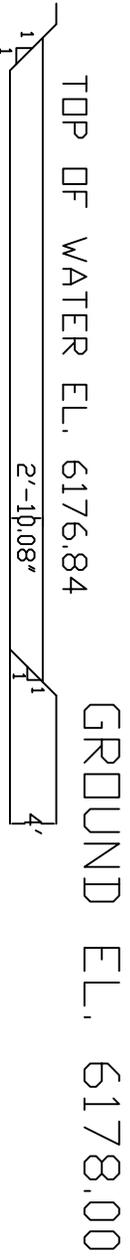


1 inch equals 150 feet





 Environmental & Industrial Services 21 NORTH MAIN STREET WILMINGTON, MA 01890 (617) 472-3914	NO.	REVISION	DATE	BY	CHKD.	APP'D.	POND #1
							ASSOCIATED ENERGY SERVICES WILMINGTON, OHIO



BOTTOM EL. 6174

<p>Environmental & Industrial Services 31 NORTH MAIN STREET HELPER, UTAH 84031 (435) 472-2711</p>	NO.	REVISION	DATE	BY	CHKD.	<p>POND #2</p> <p>ASSOCIATED PUMP SERVICES HELPER, UTAH</p>

APPENDIX 2
NOAA PRECIPITATION FREQUENCY ESTIMATES

NOAA Atlas 14, Volume 1, Version 5 PRICE

WAREHOUSES

Station ID: 42-7026

Location name: Price, Utah, US*

Coordinates: 39.6167, -110.8000

Elevation:

Elevation (station metadata): 5700 ft*

* source: Google Maps



POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yelka, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

[PF_tabular](#) | [PF_graphical](#) | [Maps & aerials](#)

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches) ¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.124 (0.107-0.146)	0.156 (0.137-0.184)	0.213 (0.184-0.251)	0.264 (0.229-0.312)	0.344 (0.288-0.406)	0.416 (0.340-0.493)	0.501 (0.400-0.596)	0.601 (0.461-0.721)	0.758 (0.551-0.929)	0.899 (0.626-1.12)
10-min	0.189 (0.163-0.222)	0.238 (0.209-0.281)	0.324 (0.280-0.381)	0.401 (0.348-0.474)	0.523 (0.439-0.618)	0.633 (0.517-0.750)	0.762 (0.609-0.906)	0.914 (0.701-1.10)	1.15 (0.839-1.41)	1.37 (0.953-1.70)
15-min	0.234 (0.202-0.275)	0.295 (0.259-0.348)	0.401 (0.347-0.473)	0.497 (0.431-0.587)	0.648 (0.544-0.766)	0.784 (0.641-0.930)	0.945 (0.755-1.12)	1.13 (0.870-1.36)	1.43 (1.04-1.75)	1.70 (1.18-2.11)
30-min	0.315 (0.272-0.370)	0.397 (0.348-0.468)	0.540 (0.466-0.636)	0.669 (0.580-0.791)	0.873 (0.732-1.03)	1.06 (0.863-1.25)	1.27 (1.02-1.51)	1.53 (1.17-1.83)	1.93 (1.40-2.36)	2.29 (1.59-2.84)
60-min	0.390 (0.337-0.458)	0.491 (0.431-0.579)	0.668 (0.577-0.787)	0.828 (0.718-0.979)	1.08 (0.906-1.28)	1.31 (1.07-1.55)	1.57 (1.26-1.87)	1.89 (1.45-2.27)	2.38 (1.73-2.92)	2.83 (1.97-3.52)
2-hr	0.461 (0.401-0.533)	0.570 (0.503-0.664)	0.736 (0.643-0.848)	0.898 (0.783-1.03)	1.15 (0.973-1.32)	1.37 (1.13-1.60)	1.63 (1.31-1.92)	1.94 (1.51-2.29)	2.45 (1.80-2.96)	2.91 (2.06-3.59)
3-hr	0.512 (0.452-0.583)	0.636 (0.559-0.727)	0.798 (0.704-0.906)	0.953 (0.838-1.08)	1.19 (1.02-1.35)	1.39 (1.17-1.61)	1.65 (1.36-1.94)	1.96 (1.56-2.32)	2.47 (1.89-2.99)	2.93 (2.16-3.63)
6-hr	0.629 (0.559-0.703)	0.769 (0.690-0.865)	0.944 (0.840-1.06)	1.09 (0.973-1.22)	1.30 (1.15-1.46)	1.48 (1.28-1.67)	1.74 (1.48-1.99)	2.05 (1.71-2.37)	2.56 (2.06-3.03)	3.01 (2.36-3.66)
12-hr	0.754 (0.684-0.837)	0.929 (0.840-1.03)	1.11 (1.00-1.24)	1.28 (1.14-1.42)	1.48 (1.32-1.66)	1.65 (1.45-1.86)	1.82 (1.58-2.08)	2.12 (1.81-2.43)	2.62 (2.20-3.04)	3.06 (2.51-3.70)
24-hr	0.983 (0.886-1.09)	1.21 (1.10-1.35)	1.47 (1.33-1.64)	1.67 (1.51-1.87)	1.95 (1.75-2.17)	2.16 (1.92-2.40)	2.37 (2.10-2.63)	2.58 (2.26-2.88)	2.85 (2.46-3.19)	3.08 (2.62-3.74)
2-day	1.12 (1.01-1.24)	1.38 (1.24-1.53)	1.67 (1.51-1.85)	1.90 (1.71-2.11)	2.21 (1.97-2.44)	2.44 (2.17-2.72)	2.68 (2.36-2.99)	2.92 (2.55-3.27)	3.22 (2.78-3.64)	3.45 (2.95-3.93)
3-day	1.20 (1.09-1.33)	1.49 (1.34-1.65)	1.80 (1.63-1.99)	2.05 (1.84-2.27)	2.39 (2.13-2.64)	2.64 (2.34-2.93)	2.90 (2.55-3.23)	3.16 (2.76-3.53)	3.49 (3.01-3.94)	3.75 (3.19-4.26)
4-day	1.29 (1.17-1.43)	1.59 (1.45-1.76)	1.93 (1.74-2.13)	2.20 (1.98-2.43)	2.56 (2.29-2.83)	2.84 (2.52-3.15)	3.12 (2.75-3.46)	3.40 (2.96-3.79)	3.77 (3.24-4.23)	4.04 (3.44-4.58)
7-day	1.48 (1.34-1.65)	1.83 (1.66-2.04)	2.23 (2.00-2.47)	2.54 (2.28-2.82)	2.96 (2.65-3.29)	3.27 (2.90-3.65)	3.60 (3.16-4.03)	3.92 (3.41-4.40)	4.34 (3.72-4.91)	4.65 (3.95-5.30)
10-day	1.69 (1.53-1.89)	2.10 (1.90-2.35)	2.55 (2.29-2.84)	2.90 (2.60-3.23)	3.37 (3.00-3.76)	3.71 (3.29-4.14)	4.06 (3.58-4.54)	4.41 (3.86-4.94)	4.85 (4.19-5.49)	5.18 (4.43-5.91)
20-day	2.09 (1.88-2.35)	2.60 (2.34-2.92)	3.18 (2.84-3.57)	3.63 (3.25-4.08)	4.24 (3.76-4.75)	4.69 (4.14-5.27)	5.14 (4.50-5.79)	5.59 (4.85-6.32)	6.17 (5.28-7.02)	6.60 (5.59-7.56)
30-day	2.44 (2.23-2.71)	3.03 (2.76-3.37)	3.67 (3.34-4.06)	4.16 (3.78-4.61)	4.80 (4.33-5.31)	5.26 (4.72-5.84)	5.72 (5.10-6.37)	6.16 (5.46-6.89)	6.72 (5.88-7.58)	7.13 (6.18-8.08)
45-day	2.92 (2.66-3.22)	3.62 (3.30-4.00)	4.39 (4.00-4.84)	4.98 (4.51-5.48)	5.73 (5.16-6.32)	6.28 (5.64-6.93)	6.81 (6.08-7.53)	7.31 (6.49-8.11)	7.95 (6.98-8.85)	8.40 (7.32-9.39)
60-day	3.39 (3.10-3.76)	4.21 (3.85-4.67)	5.12 (4.66-5.65)	5.81 (5.27-6.41)	6.69 (6.04-7.40)	7.34 (6.59-8.12)	7.96 (7.09-8.84)	8.55 (7.57-9.55)	9.30 (8.15-10.4)	9.83 (8.53-11.1)

¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

APPENDIX 3

**AES DIVERSION DITCH CALCULATIONS
AES DRAINAGE AREA #1 CALUCLATIONS
AES DRAINAGE AREA #2 CALCULATIONS
AES DRAINAGE AREA #3 CALCULATIONS
&
UPPER & LOWER CELL POND INFORMATION**

AES Diversion Ditch

Tom Paluso

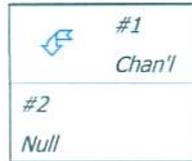
General Information

Storm Information:

Storm Type:	NRCS Type II
Design Storm:	100 yr - 24 hr
Rainfall Depth:	2.370 inches

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Channel	#1	==>	#2	0.111	0.415	Overflow Ditch
Null	#2	==>	End	0.000	0.000	



Structure Routing Details:

Stru #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	8. Large gullies, diversions, and low flowing streams	7.66	255.00	3,330.00	8.30	0.111
#1	Muskingum K:					0.111

Structure Summary:

	Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#1	79.550	79.550	36.57	2.83
#2	0.000	79.550	34.60	2.83

Structure Detail:

Structure #1 (Vegetated Channel)

Overflow Ditch

Trapezoidal Vegetated Channel Inputs:

Material: Bermuda grass

Bottom Width (ft)	Left Sideslope Ratio	Right Sideslope Ratio	Slope (%)	Retardance Classes	Freeboard Depth (ft)	Freeboard % of Depth	Freeboard Mult. x (VxD)	Limiting Velocity (fps)
3.00	1.0:1	1.0:1	1.0	D, B	1.00			6.0

Vegetated Channel Results:

	Stability Class D w/o Freeboard	Stability Class D w/ Freeboard	Capacity Class B w/o Freeboard	Capacity Class B w/ Freeboard
Design Discharge:	36.57 cfs		36.57 cfs	
Depth:	1.80 ft	2.80 ft	2.67 ft	3.67 ft
Top Width:	6.60 ft	8.60 ft	8.35 ft	10.35 ft
Velocity:	4.23 fps		2.41 fps	
X-Section Area:	8.65 sq ft		15.16 sq ft	
Hydraulic Radius:	1.068 ft		1.436 ft	
Froude Number:	0.65		0.32	
Roughness Coefficient:	0.0368		0.0786	

Structure #2 (Null)

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	79.550	0.111	0.111	0.415	71.000	M	39.57	2.832
	Σ	79.550						36.57	2.832
#2	Σ	79.550						34.60	2.832

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	8. Large gullies, diversions, and low flowing streams	7.66	255.00	3,330.02	8.300	0.111
#1	1	Time of Concentration:					0.111

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	8. Large gullies, diversions, and low flowing streams	7.66	255.00	3,330.00	8.300	0.111
#1	1	Muskingum K:					0.111

AES Drainage Area #1

Tom Paluso

EIS Environmental & Engineering Consulting
31 North Main Street
Helper, Utah 84526

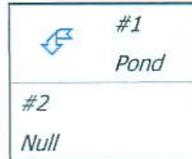
General Information

Storm Information:

Storm Type:	NRCS Type II
Design Storm:	100 yr - 24 hr
Rainfall Depth:	2.370 inches

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	#2	0.372	0.165	
Null	#2	==>	End	0.000	0.000	



Structure Routing Details:

Stru #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	7. Paved area and small upland gullies	0.18	2.00	1,125.00	0.84	0.372
#1	Muskingum K:					0.372

Structure Summary:

		Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#1	In	10.350	10.350	4.95	0.77
	Out			4.95	0.77
#2		0.000	10.350	4.70	0.77

Structure Detail:

Structure #1 (Pond)

Pond Inputs:

Initial Pool Elev:	6,181.50 ft
Initial Pool:	0.85 ac-ft

Broad-crested Weir

Weir Width (ft)	Spillway Elev (ft)
50.00	6,181.50

Pond Results:

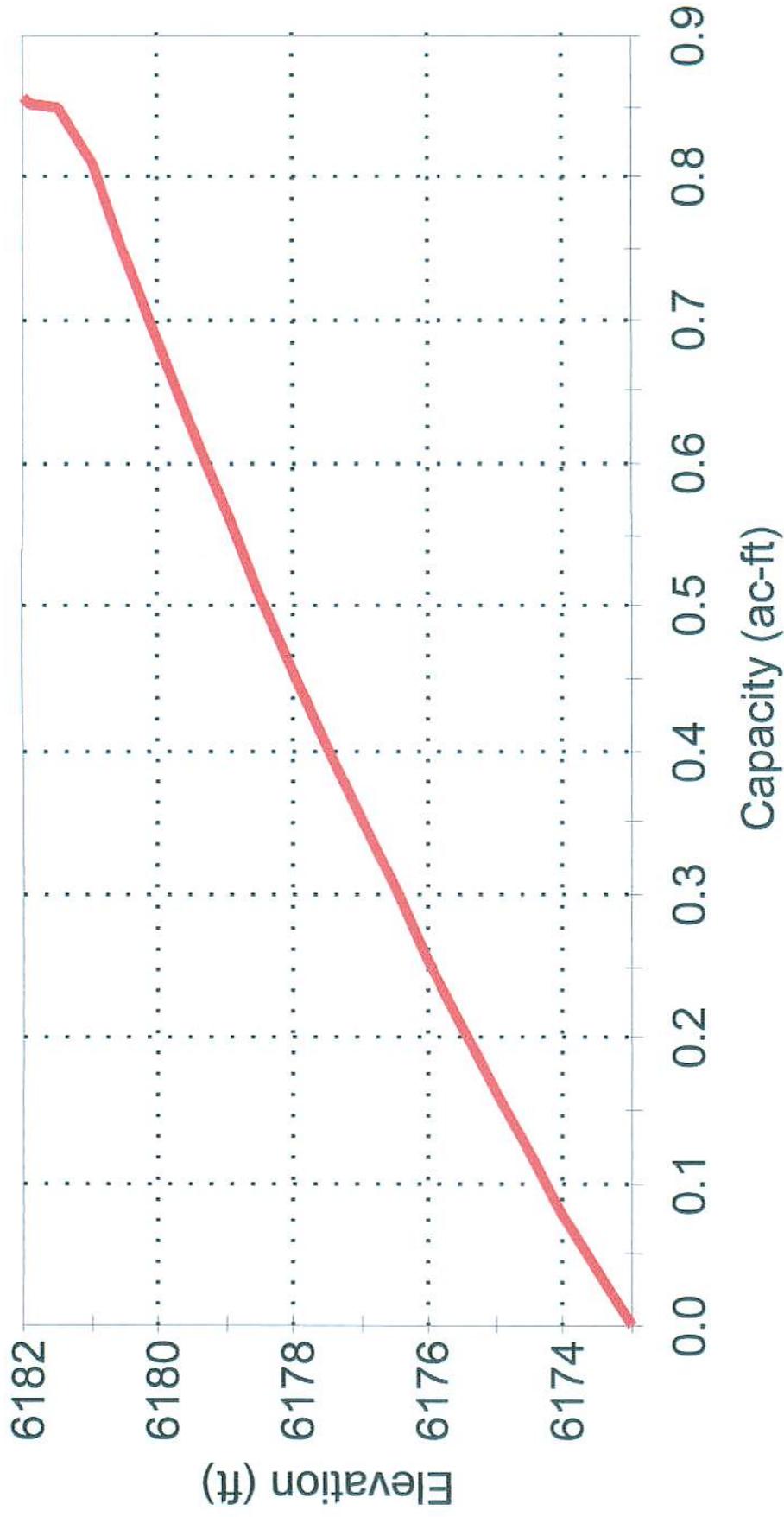
Peak Elevation:	6,181.55 ft
Dewater Time:	0.61 days

Dewatering time is calculated from peak stage to lowest spillway

Elevation-Capacity-Discharge Table

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)
6,173.00	0.075	0.000	0.000	
6,173.50	0.078	0.038	0.000	
6,174.00	0.081	0.078	0.000	
6,174.50	0.084	0.119	0.000	
6,175.00	0.088	0.162	0.000	
6,175.50	0.091	0.207	0.000	
6,176.00	0.094	0.253	0.000	
6,176.50	0.097	0.301	0.000	
6,177.00	0.101	0.351	0.000	
6,177.50	0.104	0.402	0.000	
6,178.00	0.108	0.455	0.000	
6,178.50	0.111	0.510	0.000	
6,179.00	0.115	0.567	0.000	
6,179.50	0.118	0.625	0.000	
6,180.00	0.122	0.685	0.000	
6,180.50	0.126	0.747	0.000	
6,181.00	0.130	0.811	0.000	
6,181.50	0.029	0.848	0.000	Spillway #1
6,181.55	0.050	0.849	4.946	14.75 Peak Stage

Pond #1 AES Drainage Area #1



Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)
6,181.90	0.000	0.852	39.034	
6,182.00	0.138	0.856	54.571	

Detailed Discharge Table

Elevation (ft)	Broad- crested Weir (cfs)	Combined Total Discharge (cfs)
6,173.00	0.000	0.000
6,173.50	0.000	0.000
6,174.00	0.000	0.000
6,174.50	0.000	0.000
6,175.00	0.000	0.000
6,175.50	0.000	0.000
6,176.00	0.000	0.000
6,176.50	0.000	0.000
6,177.00	0.000	0.000
6,177.50	0.000	0.000
6,178.00	0.000	0.000
6,178.50	0.000	0.000
6,179.00	0.000	0.000
6,179.50	0.000	0.000
6,180.00	0.000	0.000
6,180.50	0.000	0.000
6,181.00	0.000	0.000
6,181.50	0.000	0.000
6,181.90	39.034	39.034
6,182.00	54.571	54.571

Structure #2 (Null)

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	10.350	0.372	0.372	0.165	89.000	S	5.33	0.773
	Σ	10.350						4.95	0.773
#2	Σ	10.350						4.70	0.773

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	7. Paved area and small upland gullies	0.18	2.00	1,125.00	0.840	0.372
#1	1	Time of Concentration:					0.372

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	7. Paved area and small upland gullies	0.18	2.00	1,125.00	0.840	0.372
#1	1	Muskingum K:					0.372

AES Drainage Area #2

Tom Paluso

EIS Environmental & Engineering Consulting
31 North Main Street
Helper, Utah 84526

Structure Summary:

		Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#1*	In			3.54	0.25
	Out	7.110	7.110	0.00	0.00
#2		0.000	7.110	3.54	0.00

**Denotes structures with incomplete design parameters. Results for these structures have not been evaluated, and may affect downstream structures.*

AES Drainage Area #3

Tom Paluso

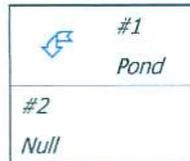
General Information

Storm Information:

Storm Type:	NRCS Type II
Design Storm:	100 yr - 24 hr
Rainfall Depth:	2.370 inches

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	#2	0.091	0.268	
Null	#2	==>	End	0.000	0.000	



Structure Routing Details:

Stru #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	5. Nearly bare and untilled, and alluvial valley fans	3.88	25.00	645.00	1.96	0.091
#1	Muskingum K:					0.091

Structure Summary:

	Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#1 In	3.880	3.880	1.59	0.13
Out			1.50	0.13
#2	0.000	3.880	1.32	0.13

Structure Detail:

Structure #1 (Pond)

Pond Inputs:

Initial Pool Elev:	6,177.90 ft
Initial Pool:	0.15 ac-ft

Broad-crested Weir

Weir Width (ft)	Spillway Elev (ft)
10.00	6,177.90

Pond Results:

Peak Elevation:	6,178.05 ft
Dewater Time:	0.50 days

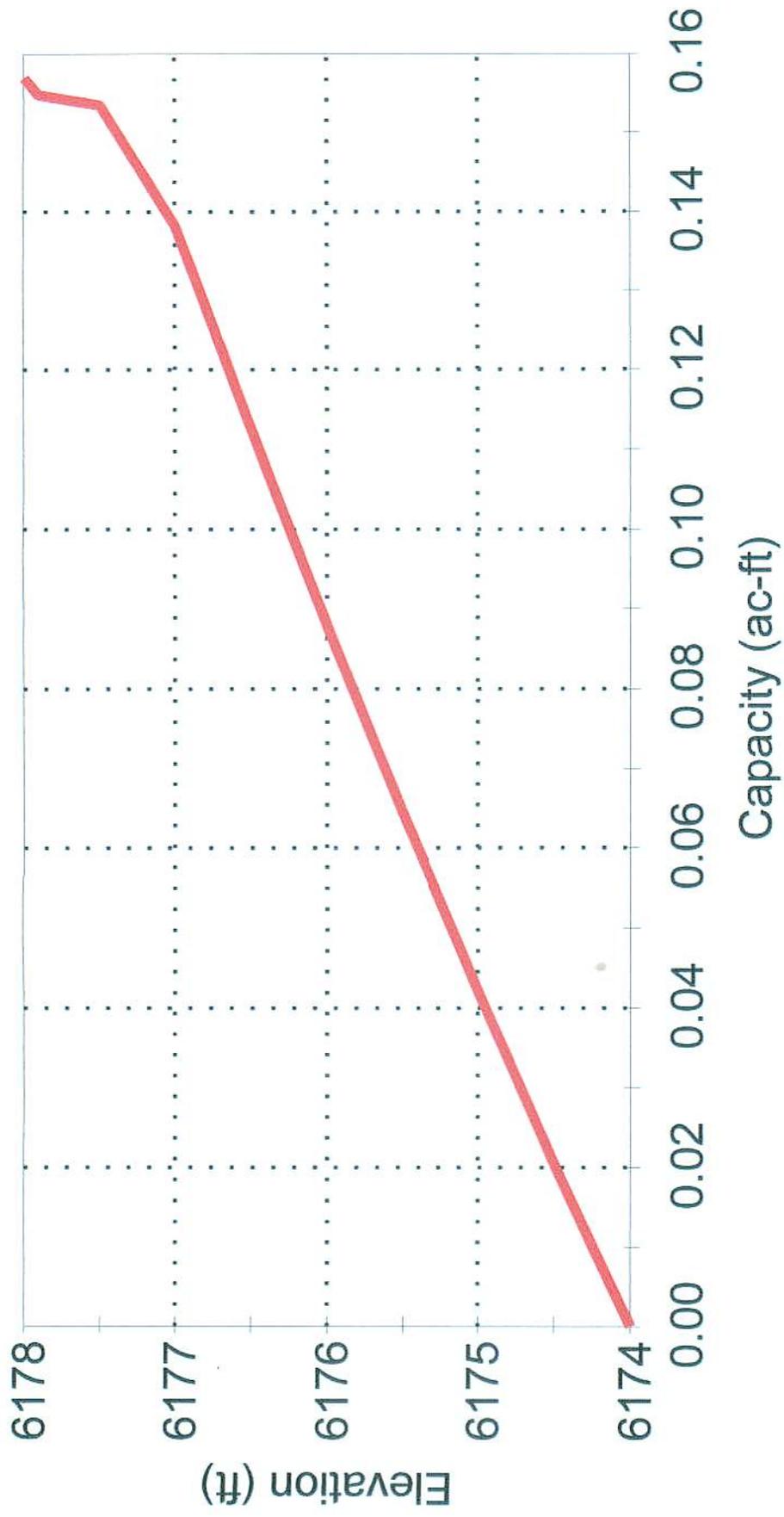
Dewatering time is calculated from peak stage to lowest spillway

Elevation-Capacity-Discharge Table

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)
6,174.00	0.040	0.000	0.000	
6,174.50	0.042	0.020	0.000	
6,175.00	0.044	0.042	0.000	
6,175.50	0.046	0.064	0.000	
6,176.00	0.048	0.088	0.000	
6,176.50	0.050	0.113	0.000	
6,177.00	0.053	0.138	0.000	
6,177.50	0.012	0.153	0.000	
6,177.90	0.000	0.155	0.000	Spillway #1
6,178.00	0.057	0.157	0.978	

Detailed Discharge Table

Pond #2 Drainage Area #3



Elevation (ft)	Broad- crested Weir (cfs)	Combined Total Discharge (cfs)
6,174.00	0.000	0.000
6,174.50	0.000	0.000
6,175.00	0.000	0.000
6,175.50	0.000	0.000
6,176.00	0.000	0.000
6,176.50	0.000	0.000
6,177.00	0.000	0.000
6,177.50	0.000	0.000
6,177.90	0.000	0.000
6,178.00	0.978	0.978

Structure #2 (Null)

Subwatershed Hydrology Detail:

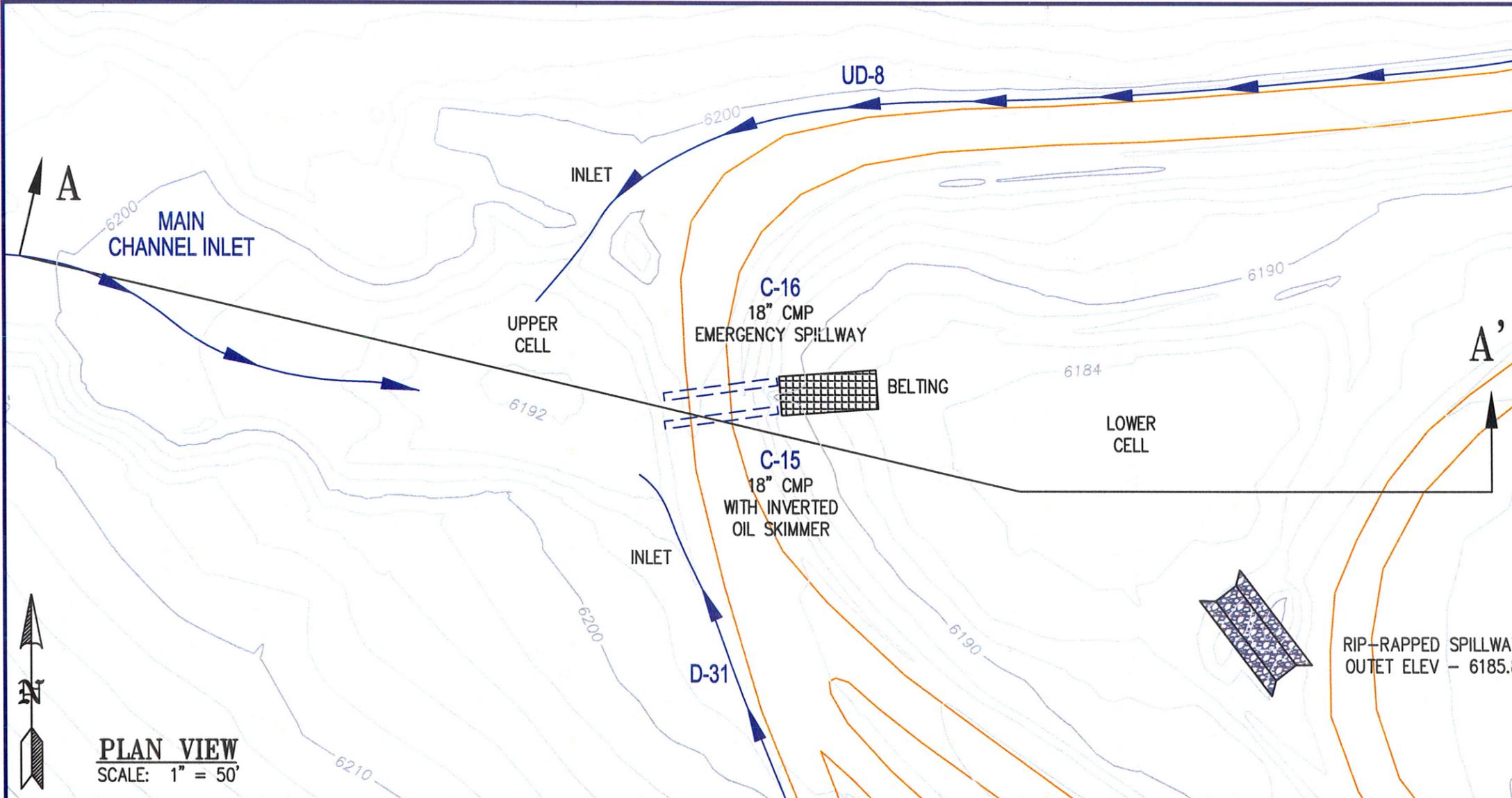
Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	3.880	0.091	0.091	0.268	70.000	M	1.77	0.127
	Σ	3.880						1.59	0.127
#2	Σ	3.880						1.32	0.127

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	5. Nearly bare and untilled, and alluvial valley fans	3.88	25.00	645.00	1.960	0.091
#1	1	Time of Concentration:					0.091

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	5. Nearly bare and untilled, and alluvial valley fans	3.88	25.00	645.00	1.960	0.091
#1	1	Muskingum K:					0.091



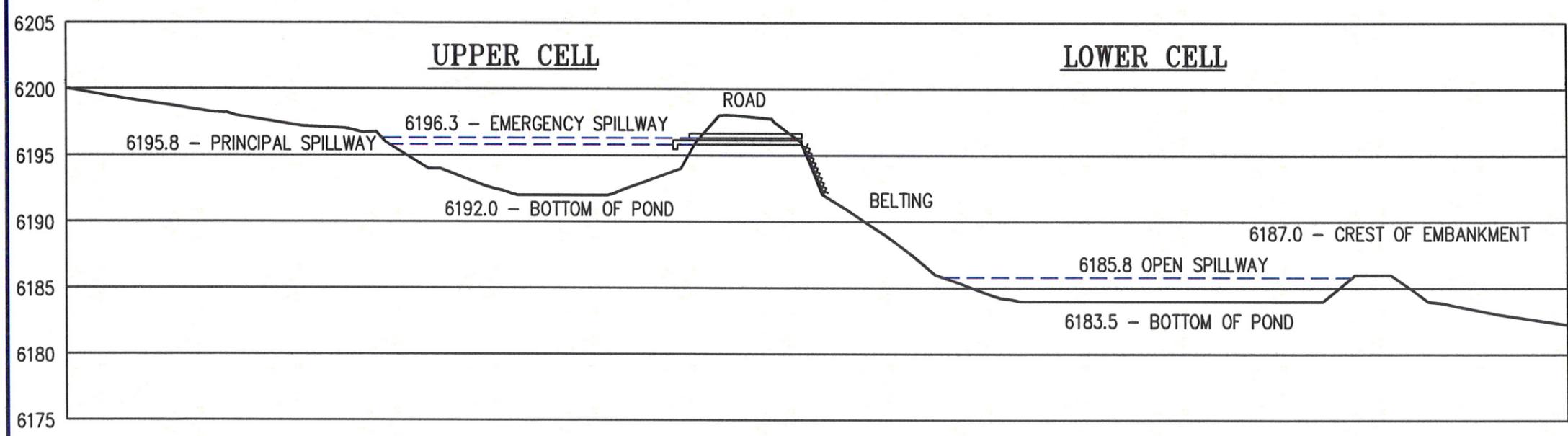
PLAN VIEW
SCALE: 1" = 50'

STAGE VOLUME
"PERMANENT IMPOUNDMENT"

ITEM	ELEVATION	VOLUME (Ac. Ft.)
BOTTOM OF UPPER CELL	6192.0	0
EMERGENCY SPILLWAY	6196.3	0.539
PRINCIPAL SPILLWAY	6195.8	0.437
BOTTOM OF LOWER CELL	6183.5	0.437
OVERFLOW FOR LOWER CELL	6185.8	1.114

VOLUME:
REQUIRED: 1.031 Ac. Ft.
EXISTING: 1.114 Ac. Ft.

NOTE:
NOT A SEDIMENT POND.



SECTION A-A'
VERTICAL EXAGGERATION 5X

HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 10'

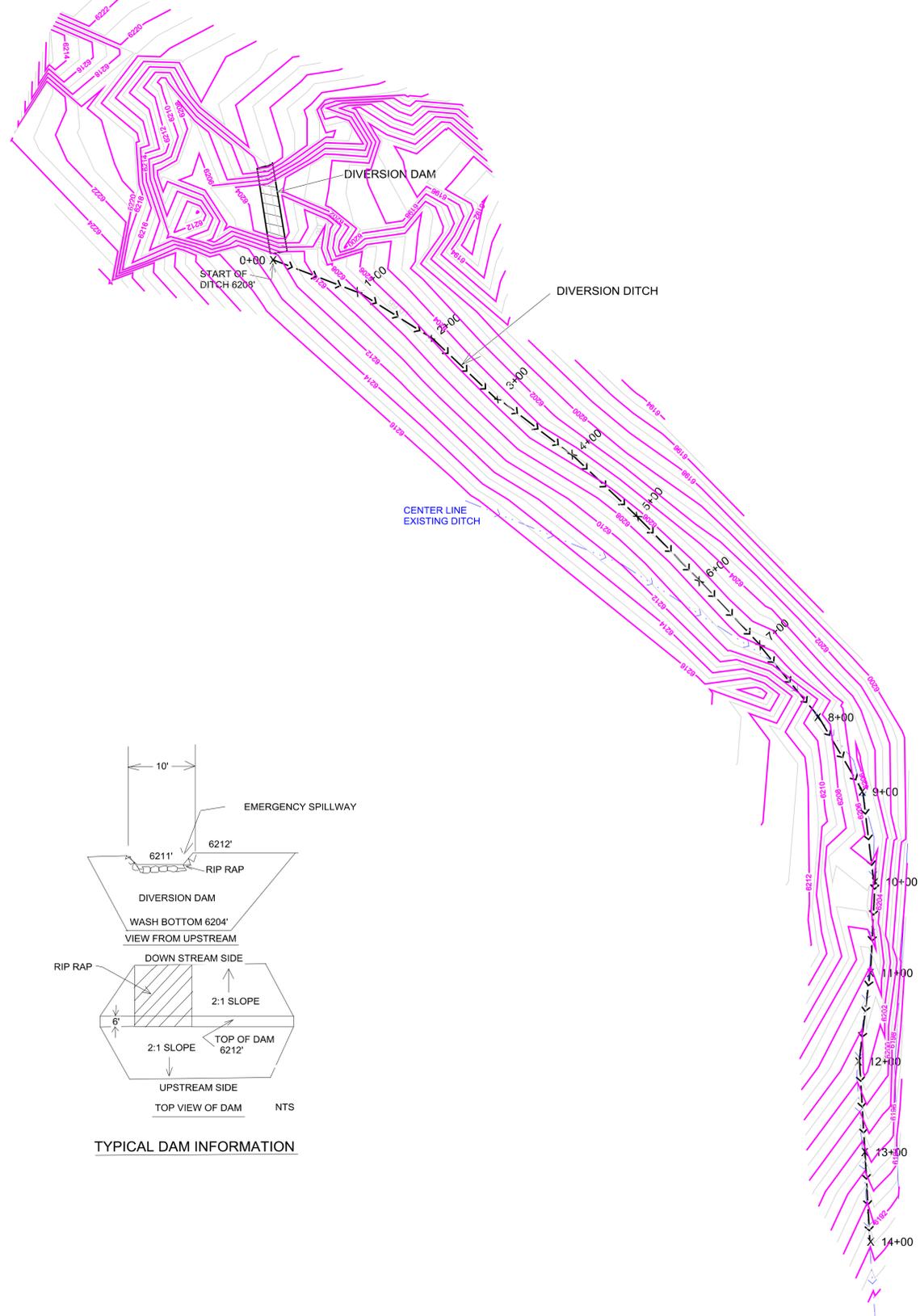


ANDALEX
RESOURCES, INC.

WILDCAT LOADOUT
PERMANENT IMPOUNDMENT
EXISTING

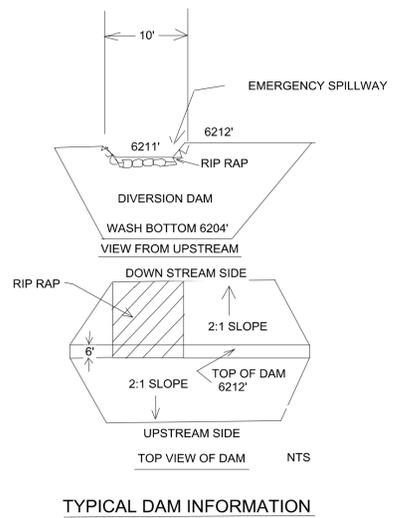
<small>REVISION NUMBER:</small> 2	<small>SCALE:</small> AS SHOWN
<small>DATE:</small> JULY 2010	PLATE 3H

APPENDIX 4
DIVERSION DITCH & DAM INFORMATION

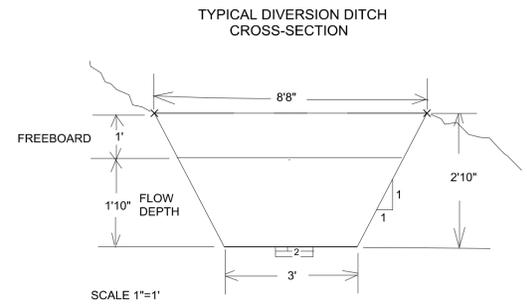


DIVERSION DITCH INFORMATION

STA	GROUND ELEVATION	BOTTOM DITCH ELEVATION	CUT FEET
0+00	6212'	6208'	4 AT DIVERSION DAM
1+00	6208'	6207'	1
2+00	6206'	6206'	0
3+00	6205'	6205'	0
4+00	6205'	6204'	1
5+00	6205.5'	6203'	3.5
6+00	6207'	6202'	5
7+00	6208'	6201'	7
8+00	6209'	6200'	9
9+00	6205.5'	6199'	6.5
10+00	6206'	6198'	8
11+00	6204'	6197'	7
12+00	6201'	6196'	5
13+00	6195.5'	6195'	0.5
14+00	6190.5'	6194'	0 AT EXISTING DITCH



TYPICAL DAM INFORMATION



EIS ENVIRONMENTAL & ENGINEERING CONSULTING 31 NORTH MAIN HELPER, UTAH 84526	
WILDCAT LOADOUT DRAINAGE MODIFICATION	
DRAWN BY: MORGAN MOON CO. L.L.C.	
SCALE 1"=80'	DRAWING NO. 1401



T13S, R9E, SEC. 33
T14S, R9E, SEC. 4

BLM RIGHT-OF-WAY (U-48027)

- LEGEND**
- - - - - EXISTING BLM RIGHT OF WAY (U-48027)
 - - - - - DOGM PERMIT BOUNDARY
 - - - - - EXISTING DISTURBED AREA BOUNDARY (73.74 ACRES)
 - - - - - AES OIL LOADING TERMINAL



CONTOUR INTERVAL - 2'
PHOTOGRAPHY DATE: 10/22/2006

INTERMOUNTAIN POWER AGENCY	
WILDCAT LOADOUT C/007/0030 EXISTING SURFACE FACILITY MAP	
REVISION NUMBER: 5	SCALE: 1" = 150'
DATE: JULY 2010	PLATE 1