PARK CITY MUNICIPAL CORPORATION

WATER PIPELINE INTERCONNECTION JUDGE TUNNEL WATER LINE

ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT

APRIL 2010
UPDATED MARCH 2013

PREPARED FOR: ENVIRONMENTAL PROTECTION AGENCY, REGION 8
PREPARED BY: PARK CITY MUNICIPAL CORPORATION
CONSULTANTS: STANTEC CONSULTING SERVICES
UPDATED BY BOWEN COLLINS & ASSOCIATES

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
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http://www.epa.gov/region08

MAR 14 2013

Ref: 8P-W-TF

FINDING OF NO SIGNIFICANT IMPACT

PROJECT: Judge Tunnel Water Line, Park City Municipal Corporation, Summit County, Utah

TO: All Interested Government Agencies and the Public

TOTAL EPA GRANT: $ 3,587,636
EPA PORTION: $ 1,973,200
LOCAL MATCH: $ 1,614,436

As required by the National Environmental Policy Act (NEPA), an environmental review has been performed on the proposed U.S. Environmental Protection Agency (EPA) grant for the above project that will be funded in part by the EPA through a Special Appropriations Grant.

The overall purpose of the proposed Judge Tunnel pipeline is to improve drinking water quality and reliability of the Judge Tunnel as a water supply source for Park City. This project utilizes water that currently is discharged to a drainage channel (located approximately ½ mile up Empire Canyon) and Judge Tunnel water that currently enters Park City Municipal Corporation's (PCMC) drinking water system. The proposed action is to convey Judge Tunnel water that currently discharges from the Judge Tunnel waterworks to Quinn's Junction Water Treatment Plant (QWTP) for treatment so that it will comply with the National Primary Drinking Water Standards promulgated at 40 C.F.R. Part 141, in accordance with the Safe Drinking Water Act, 42 U.S.C. § 300f et seq.. Specifically, the drinking water standard (MCL) for antimony will be consistently achieved by blending water from the Judge Tunnel with other water sources at the QWTP.

The proposed project is a new 24,000 foot raw water pipeline to convey water from the Judge Tunnel to the QWTP. The overall cost of the water line project is estimated at $8,000,000.

The Environmental Assessment evaluated four alternatives described briefly below.

Alignment Alternative 1 – Treasure Hill (**Proposed Alternative**)

This alignment goes down Empire Canyon road and heads northwest along an existing water line to the Woodside tank. It then continues north in the foothills through the Park City Mountain Resort and along west Park City on Lowell Avenue before coming through the Park City Golf

Club course, then east down Homestake Road and Kearns Boulevard to connect to an existing pipeline on Wyatt Earp Way.

Alignment Alternative 2 – Marsac Avenue to Deer Valley Dr.

This alignment goes down Empire Canyon road and heads east up to Prospect Ridge, then drops down to Marsac Avenue, then to Deer Valley Drive. It ties into an existing waterline that goes along Deer Valley Drive and Bonanza Drive. The alignment then heads east toward the proposed water treatment plant.

Alignment Alternative 3– Chatham Crossing

This alignment goes down Empire Canyon road and heads east up to Prospect Ridge. The alignment then travels down Prospect Ridge and drops down to Marsac Avenue. The alignment eventually drops down and goes along the Deer Valley ponds. It continues on Solamere Drive and heads north and follows an existing 30' water line easement north through the Chatham Crossing subdivision to the Park City Rail Trail where it heads east towards Wyatt Earp Way.

Alignment Alternative 4 – US-40 Frontage Road

This alignment goes down Empire Canyon road and heads east up to Prospect Ridge then drops down to Marsac Ave. The alignment continues east eventually following the easement to the Morning Star Estates Subdivision, and follows an existing 50' right-of-way then crosses through the Gillmor property. It then travels north along the Summit County frontage road to an existing dirt road on the south side of Silver Creek where it heads west then north across the rail trail and Silver Creek to the proposed water treatment plant. A portion of this alignment is located in Summit County.

The Environmental Assessment reviewed the potential for impacts to: geology, soils, groundwater, regulated sites, water quality, water quantity, wetlands, riparian habitat, wildlife, noxious weeds, air quality, visual resources, cultural resources, traffic, noise, environmental justice communities, prime farmland and trails. A summary of the main environmental factors identified in the environmental analysis is as follows:

1) Pipeline alignment Options 1 and 2 are within the PCMC Soils Ordinance Boundary; compliance measures necessary.
2) Crossing of tributary to McLeod Creek required; Army Corps of Engineers (ACOE) permitting may be necessary.
3) Potential impacts to Silver Creek. See Section 1.3.
4) Temporary impacts to wetlands anticipated; wetland delineation and permitting may be necessary.

The Environmental Assessment identified no significant impacts to these resources. The proposed project will have few environmental impacts other than the typical impacts of installing an underground pipeline, such as dust, traffic and noise. Although the project is not anticipated to affect any of the historic properties in Park City, the EPA consulted with the State Historic Preservation Officer. The specifics of the consultation are in Appendix E of the Environmental Assessment (EA). Although no impacts to historic properties are anticipated, because of the

many historic properties in the area, we have added a mitigation measure for the construction contractor to monitor for potential historic properties along Northstar Road.

The proposed project will slightly increase the diversion of water from the Judge Tunnel. Historically, most of the tunnel water has been diverted into the Park City water system. The new pipeline will allow more water to be diverted during periods of higher flows and turbidity. To mitigate the slight increase in water diversion, Park City has agreed to provide water to the Silver Maple Claims wetlands along Silver Creek. The details of the mitigation plan are included in Appendix N of the EA.

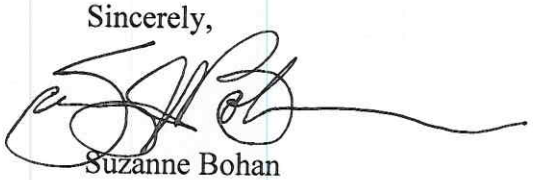
The review process did not indicate that significant environmental impacts would result from the proposed action. Consequently, a preliminary decision not to prepare an Environmental Impact Statement has been made. This action is taken on the basis of careful review of the *Park City Municipal Corporation, Water Pipeline Interconnection, Judge Tunnel Water Line Environmental Assessment* prepared for this project. Copies of the document are available at the Park City Public Work office at 1053 Iron Horse Drive, Park City, Utah 84060 or on line at http://www.epa.gov/region8/compliance/nepa/docs.html.

Comments supporting or disagreeing with this decision may be submitted for consideration by the EPA to:

Bruce Cooper
cooper.bruce@epa.gov
US EPA, Region 8, 8P-W-TF
1595 Wynkoop Street
Denver, CO 80202-1129

After evaluating the comments received, the EPA will make a final decision. No administrative action will be taken on the project for at least 30 calendar days after release of the Finding of No Significant Impact.

Sincerely,



Suzanne Bohan
Director, NEPA Compliance and Review Program
Ecosystems Protection and Remediation

EXECUTIVE SUMMARY

This Environmental Assessment (EA) has been prepared to evaluate the environmental impacts associated with the construction of a water pipeline to convey water from municipal water works connected to the Judge Tunnel portal located in Park City, Utah, to Quinn's Water Treatment Plant (QWTP) near Quinn's Junction in Park City, Utah downstream and northeast of the Judge Tunnel. The project will be funded in part through grants from the U.S. Environmental Protection Agency (EPA). Therefore, this EA has been prepared to comply with the requirements of the National Environmental Policy Act (NEPA) 42 U.S.C. §§ 4321 et seq. and implementing regulations found at 40 C.F.R. §§ 1500 et seq. and 40 C.F.R. Part 6.

The overall purpose of the proposed Judge Tunnel pipeline is to increase the use and reliability of the Judge Tunnel as a water supply source for Park City. The proposed action is to convey Judge Tunnel water that currently discharges from the Judge Tunnel waterworks to QWTP to comply with the National Primary Drinking Water Standards promulgated at 40 C.F.R. Part 141, in accordance with the Safe Drinking Water Act, 42 U.S.C. § 300f et seq. This includes water that currently is discharged to a drainage channel (located approximately ½ mile up Empire Canyon) and Judge Tunnel water that currently enters Park City Municipal Corporation's (PCMC) drinking water system. After construction of the project, water from the Judge Tunnel will no longer directly enter the Park City culinary water system.

Under normal circumstances, all of the water from the Judge Tunnel waterworks is diverted into the Park City Municipal Corporation's (PCMC) drinking water delivery system. However, there are particular conditions when all of this water cannot be diverted for drinking water, and is discharged into Empire Creek (tributary to Poison Creek), and eventually to Silver Creek. This occurs during the following conditions:

- Spring runoff conditions when flows reach peaks of approximately 2,500 gallons per minute.

- Periods of tunnel maintenance, high flows, or other tunnel upsets when water turbidity exceeds 5 NTU.

The pipeline will be used to convey water from Judge Tunnel to the QWTP where it will be blended with other raw water sources and treated for use in the PCMC drinking water system. The Judge Tunnel pipeline may also be used as part of a raw water delivery system to irrigate City parks and other large irrigated areas with Judge Tunnel water. This will be subject to any future Clean Water Act Utah Pollutant Discharge Elimination System (UPDES) surface water discharge permit requirements. The Judge Tunnel pipeline will also be routed near the existing Spiro Water Treatment Plant (WTP), which is a potential site for a future pre-treatment plant to comply with a future UPDES permit. The Judge Tunnel pipeline may be oversized from Spiro WTP to QWTP to allow for the future possibility of conveying Spiro Tunnel water and other sources to QWTP for treatment.

This Environmental Assessment is for the collection and conveyance of this water from the Judge Tunnel waterworks to Quinn's Junction. PCMC proposes to install a 12-inch to 18-inch water pipeline to convey this water. Four pipeline alignments and a No Action option were evaluated. The proposed alternative is Option 1 – Treasure Hill; approximately 24,000 feet in length.

The four pipeline alignments evaluated are described briefly below and more thoroughly in Section 2 of this report.

Alignment Option 1 – Treasure Hill (Proposed Alternative)

This alignment goes down Empire Canyon road and heads northwest along an existing water line to the Woodside tank. It then continues north in the foothills through the Park City Mountain Resort and along west Park City on Lowell Avenue before coming through the Park City Golf Club course, then east down Homestake Road and Kearns Boulevard to connect to an existing pipeline on Wyatt Earp Way.

Alignment Option 2 – Marsac Avenue to Deer Valley Dr.

This alignment goes down Empire Canyon road and heads east up to Prospect Ridge, then drops down to Marsac Avenue, then to Deer Valley Drive. It ties into an existing waterline that goes along Deer Valley Drive and Bonanza Drive. The alignment then heads east toward the proposed water treatment plant.

Alignment Option 3– Chatham Crossing

This alignment goes down Empire Canyon road and heads east up to Prospect Ridge. The alignment then travels down Prospect Ridge and drops down to Marsac Avenue. The alignment eventually drops down and goes along the Deer Valley ponds. It continues on Solamere Drive and heads north and follows an existing 30' water line easement north through the Chatham Crossing subdivision to the Park City Rail Trail where it heads east towards Wyatt Earp Way.

Alignment Option 4 – US-40 Frontage Road

This alignment goes down Empire Canyon road and heads east up to Prospect Ridge then drops down to Marsac Ave. The alignment continues east eventually following the easement to the Morning Star Estates Subdivision, and follows an existing 50' right-of-way then crosses through the Gillmor property. It then travels north along the Summit County frontage road to an existing dirt road on the south side of Silver Creek where it heads west then north across the rail trail and Silver Creek to the proposed water treatment plant. A portion of this alignment is located in Summit County.

A summary of the main environmental issues identified in the environmental analysis is as follows:

1) Pipeline alignment Options 1 and 2 are within the PCMC Soils Ordinance Boundary; compliance measures necessary.
2) Crossing of tributary to McLeod Creek required; Army Corps of Engineers (ACOE) permitting may be necessary.
3) Potential impacts to Silver Creek. See Section 1.3.
4) Temporary impacts to wetlands anticipated; wetland delineation and permitting may be necessary.

PARK CITY MUNICIPAL CORPORATION

JUDGE TUNNEL WATER LINE
ENVIRONMENTAL ASSESSMENT

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LIST OF ACRONYMS AND ABBREVIATIONS

ACOE	Army Corps of Engineers
BMPs	Best Management Practices
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
cfs	cubic feet per second
DEQ	Utah Department of Environmental Quality
DWQ	Utah Division of Water Quality
DWR	Utah Division of Water Rights
E&T	Endangered and Threatened Wildlife Species
EA	Environmental Assessment
EPA	US Environmental Protection Agency
F	Fahrenheit
FONSI	Finding of No Significant Impact
LUST	Leaking Underground Storage Tank
mg/L	milligrams per liter
NEPA	National Environmental Policy Act
NWI	National Wetlands Inventory
PABFx	Palustrine Aquatic Bed Semipermanently Flooded Excavated
PABG	Palustrine Aquatic Bed Intermittently Exposed
PABGx	Palustrine Aquatic Bed Intermittently Exposed Excavated
PCMC	Park City Municipal Corporation
PDD	Peak Day Demand
PEMC	Palustrine Emergent Seasonally Flooded
PSS/EMC	Palustrine Scrub-Shrub Emergent Seasonally Flooded
QWTP	Quinn's Water Treatment Plant
ROD	Record of Decision
SBWRD	Snyderville Basin Water Reclamation District
SHPO	State Historic Preservation Office
STORET	Storage and Retrival
TMDL	Total Maximum Daily Load
UPDES	Utah Pollutant Discharge Elimnation System
UPCM	United Park City Mines
USACE	US Army Corps of Engineers
USDA	US Department of Agriculture
USGS	US Geological Services
USFWS	US Fish and Wildlife Service
UST	Underground Storage Tank
VCP	Voluntary Cleanup Program

1.0 INTRODUCTION

1.1 PURPOSE AND NEED

This Environmental Assessment (EA) has been prepared to evaluate the environmental impacts associated with the construction of a water pipeline to convey water from municipal waterworks connected to the Judge Tunnel portal located in Park City, Utah to Quinn's Junction. This EA was prepared in compliance with the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations. The project will be funded in part through grants from the U.S. Environmental Protection Agency (EPA). Park City has received four Special Appropriation Act or earmark grants of: $433,700 in fiscal year (FY) 2003, $867,800 (FY2004), $384,900 (FY2005), and $286,800 (FY2006). The City must provide a 45% match for the grants. [Previously, EPA completed an environmental review for the grants for a drinking water treatment plant located at the Judge Tunnel. Park City decided not to build that project.]

The overall purpose of the proposed Judge Tunnel pipeline is to increase the use and reliability of the Judge Tunnel as a water supply source for Park City. The proposed action is to convey Judge Tunnel water that currently discharges from the Judge Tunnel waterworks to QWTP for treatment so that it will comply with the National Primary Drinking Water Standards promulgated at 40 C.F.R. Part 141, in accordance with the Safe Drinking Water Act, 42 U.S.C. § 300f et seq. This includes water that currently is discharged to a drainage channel (located approximately ½ mile up Empire Canyon) and Judge Tunnel water that currently enters Park City Municipal Corporation's (PCMC) drinking water system.

Most of the year, 100% of the water from the Judge Tunnel is diverted into the PCMC drinking water delivery system. The water is currently piped from Judge Tunnel directly into the City's water system after chlorination. However, there are particular conditions when all of this water cannot be diverted, and it is discharged for short periods of time into an ephemeral stream, Empire Creek (tributary to Poison Creek), and eventually to Silver Creek. This occurs generally during the following conditions:

- Spring runoff conditions when flows reach peaks of approximately 2,500 gallons per minute. This generally for a short duration in late May and early June.
- Periods of tunnel maintenance, high flows, or other tunnel upsets when water turbidity exceeds 5 NTU.

This project is needed to provide a reliable means of conveyance by capturing turbid and excess flows from Judge Tunnel, and to transport the water to a newly constructed water treatment facility known as the Quinn's Water Treatment Plant (QWTP) located near Quinn's Junction in Park City, Utah. After construction of the project, water from the Judge Tunnel will no longer directly enter the Park City culinary water system.

In the future, the proposed Judge Tunnel pipeline may be used for the following additional purposes:

- Convey water from the Judge Tunnel to the QWTP or another future water treatment plant for additional treatment for discharge into Silver Creek to meet the requirements of a future UPDES (surface water) discharge permit, or irrigation of city parks and other large irrigated areas subject to future UPDES permit requirements.
- It may be sized with the future possibility of conveying Spiro Tunnel water and other sources in addition to Judge Tunnel water from near the Spiro WTP to QWTP.

Judge Tunnel water also needs to comply with the National Primary Drinking Water Standards promulgated at 40 C.F.R. Part 141, in accordance with the Safe Drinking Water Act, 42 U.S.C. § 300f et seq. which limit antimony concentrations in drinking water to 6 parts per billion (ppb). Park City routinely samples the tunnel water for antimony. In December of 2009 the antimony concentration exceeded the 6 ppb limit for drinking water. In November of 2010, the Utah Division of Drinking Water (DDW) and PCMC entered into a Bilateral Compliance Agreement (BCA), which specified actions to be taken by PCMC to bring the antimony levels into compliance. One of the listed solutions in the BCA is the Judge Tunnel pipeline to QWTP and blending Judge water with other sources to reduce the antimony concentration. In August of 2012, DDW and PCMC entered into a Compliance Order/Enforcement Agreement that extended the date to implement a solution to comply with the antimony MCL to June 15, 2014. . This agreement also specifies the Judge Tunnel pipeline to QWTP and blending as a solution. This project will provide a means for blending the tunnel water with other water sources to produce antimony concentrations below the 6 ppb threshold in compliance with the Safe Drinking Water Act. Once QWTP is upgraded to accept Judge Tunnel water the blending will occur at QWTP or in the raw water system before treatment at QWTP.

This Environmental Assessment is for the collection and conveyance of this water from the Judge Tunnel portal to Quinn's Junction. PCMC proposes to install a 8-inch to 18-inch water pipeline to convey this water. Four pipeline alignments and a No Action option were evaluated. The proposed alternative is Option 1 – Treasure Hill; approximately 24,000 feet in length. This alignment goes down Empire Canyon road and heads northwest along an existing water line to the Woodside tank. It then continues north in the foothills through the Park City Mountain Resort and along west Park City on Lowell Avenue before coming through the Park City Golf Club course, then east down Homestake Road and Kearns Boulevard to connect to an existing pipeline on Wyatt Earp Way.

1.2 STUDY AREA

The study area is located in Park City, Utah, north-central Utah, approximately 20 miles east of Salt Lake City (Figure 1). Park City is located in Summit County, Utah, in a mountainous region with an elevation of approximately 6,800 ft to 9,000 feet. The average maximum temperature is 56.1 degrees Fahrenheit (F); the average minimum temperature is 31.9 degrees F; average total precipitation is 20.72 inches; and average annual snowfall is 168.76 inches. Park City is approximately 12 square miles in size, with a population of 7,800 in 2009.

1.3 PROJECT HISTORY AND BACKGROUND

Development of the excess flow and turbid water from Judge Tunnel water as a potable water source was evaluated in 2004. The proposed project included the construction of a water treatment facility in Empire Canyon, to treat up to 1,500 gallons per minute of groundwater flowing from the tunnel. A Finding of No Significant Impact (FONSI) was issued by EPA on August 23, 2004. Subsequently, PCMC determined the construction of a water treatment plant in this location would be cost prohibitive, and therefore the project did not proceed. Since that time, PCMC has evaluated alternatives for utilizing this water, and is now proposing the conveyance of this water to QWTP. The construction of the new QWTP was completed in May, 2012. The location of this treatment facility is near Quinn's Junction, approximately one mile east of Wyatt Earp Way.

Components that have been constructed to support this project or the new water treatment plant include:

1. One mile of the Judge Tunnel waterline from Wyatt Earp Way to the QWTP. This project was constructed using local funding.
2. The Lost Canyon Import Raw Waterline. This is the main source for QWTP and will be the water source to be blended with Judge Tunnel water.

The Judge Tunnel water is currently captured within the mine portal and conveyed into a water tank located to the north and down-gradient of the Judge Tunnel portal, approximately 700 horizontal feet (see conceptual sketch below). An overflow device is located upstream of the tank to release turbid water or excess water during high peak flows. The water that is sent to the tank is chlorinated and stored for use in PCMC's existing drinking water system.

The proposed project will utilize approximately 900 feet of existing pipeline from the Judge Tunnel Portal to Empire Canyon Tank. A potential screening facility as well as drainage and minor piping improvements will be constructed near the tank. The potential screening facility would be used to screen out gravel and larger material that may flow from the Judge Tunnel. The facility would be relatively small with a footprint of less than 200 square feet and would be located near Empire Canyon Tank. However, current plans do not call for this type of facility because the Empire Canyon Tank can be modified to function as a settling basin to remove this type of material from the Judge Tunnel pipeline.

Approximately 2,200 feet of existing pipeline from the Empire Canyon Tank location to the Daly Canyon Pump Station will also be used as part of this project. The new pipeline will connect at this location to the existing pipeline.

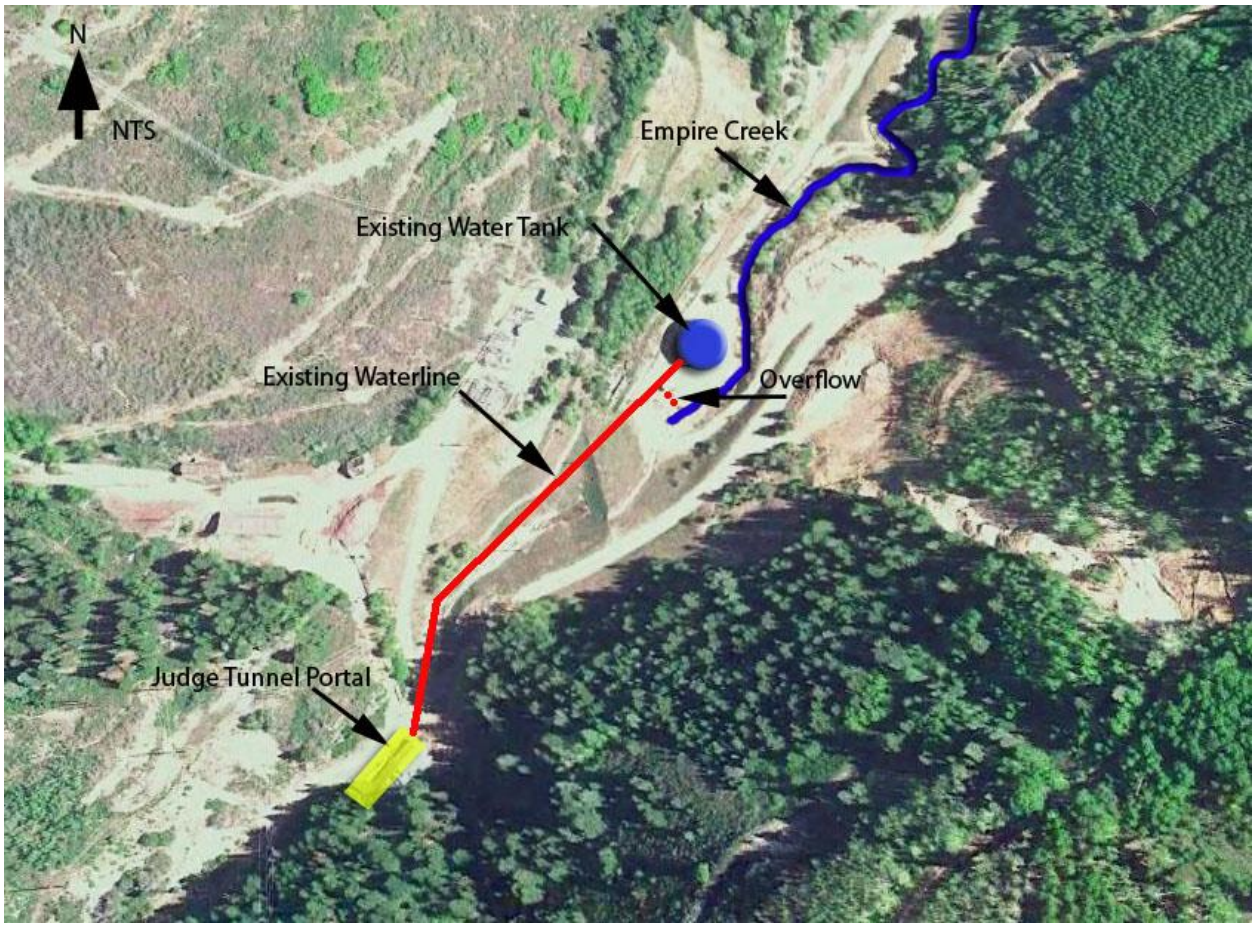


Figure 1A Judge Tunnel Portal Area

The proposed project is expected to eliminate the historic sporadic flow from Judge Tunnel overflow waterworks to the ephemeral Empire Creek except during an emergency. Table 1 shows the historic flows in Silver Creek at a gauge station located approximately 3.7 miles downstream of the Judge Tunnel Overflow to Empire Creek. The flow measured at this gauge station includes other tributaries to Silver Creek but does not account for ditch losses between Judge Tunnel and the gauge station, which are estimated to be significant (as much as 20%). Empire Creek near Judge Tunnel is an ephemeral tributary to Silver Creek. Typical flows in this portion of Empire Creek are the result of storm events, snow melt, and Judge Tunnel overflow. The flows contributed by Judge Tunnel overflow to Silver Creek ranged from 11% to 51% since 2004, with the average being 18%. Figure 1 shows the daily total flow from Judge Tunnel as an overall percentage to Empire Creek and the PCMC water system. The figure reflects the fact that the Judge Tunnel overflow to Empire Creek does not produce a consistent or reliable discharge to Empire Creek. A technical memo was prepared to address the possible effects of reduced flows in Silver Creek as a result of eliminating occasional Judge Tunnel overflows (Appendix N). This technical memo was amended to include comments from the U.S. Fish and Wildlife Service and a proposed replacement amount for what Judge Tunnel has historically contributed to the Silver Maple Claims Wetlands (Appendix O).

Table 1 Historical Silver Creek and Judge Tunnel Annual Flow Volume Data

Year	Silver Creek (acre-feet)	Judge Tunnel to Silver Creek (via Empire Creek) (acre-feet)	Percent of Silver Creek from Judge Tunnel*	Judge Tunnel to Drinking Water System (acre-feet)
2004	856	97	11%	1,057
2005	2,856	681	24%	932
2006	2,149	307	14%	1,324
2007	489**	280	57%	1,040
2008	1258**	230	18%	1,132
2009	537	274	51%	1,128
2010	1,075	278	26%	1,038
2011	2,267	252	11%	1,165
2012 (as of 11/9)	*1,265*	*53*	*7%*	*1,077*
Projected 2012	1,485	108	7%	1,264
Average	1,485	279	19%	1,120
**Average excluding 2007 & 2008	1,603	285	18%	1,130

* Does not account for ditch losses and assumes 100% of discharge flow reaches Silver Creek
** Gauging station for flow measurement was unreliable during these years. This was due to known hardware malfunction and time required to replace measuring device.

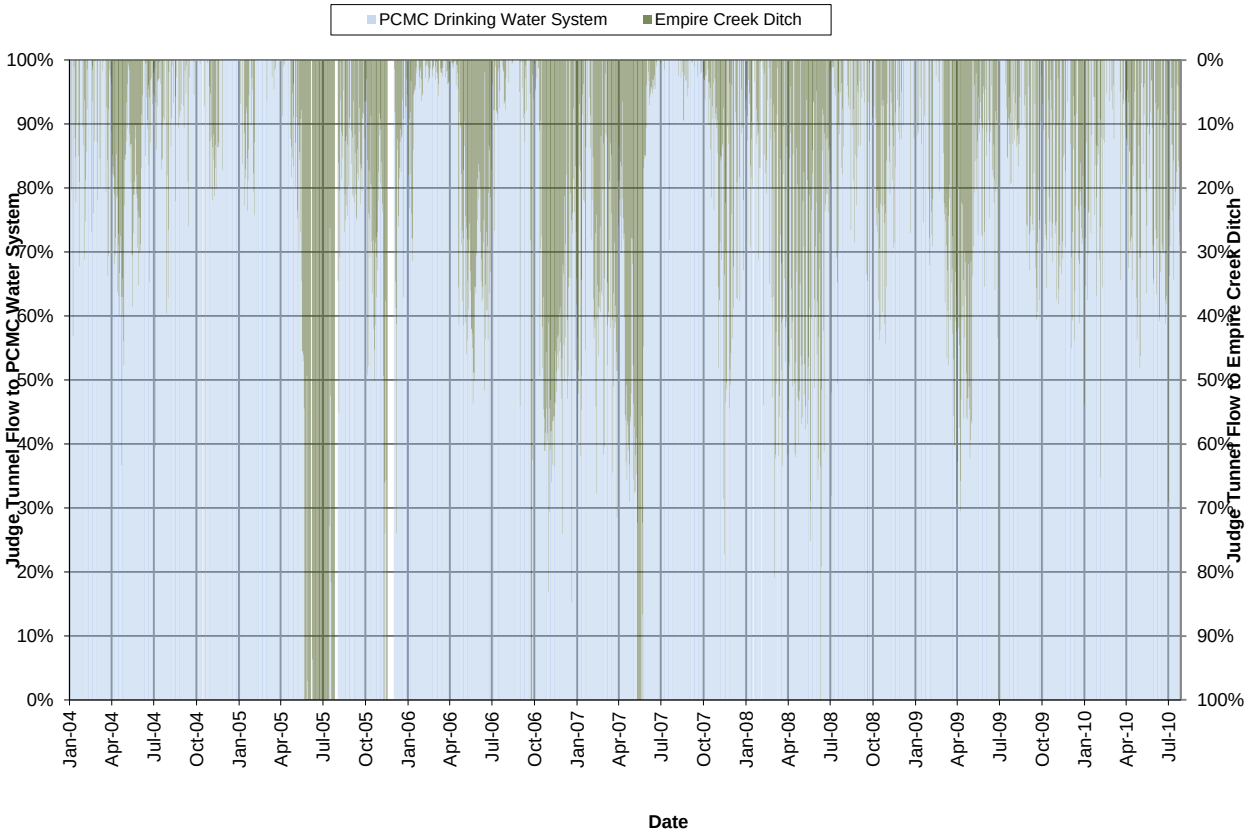
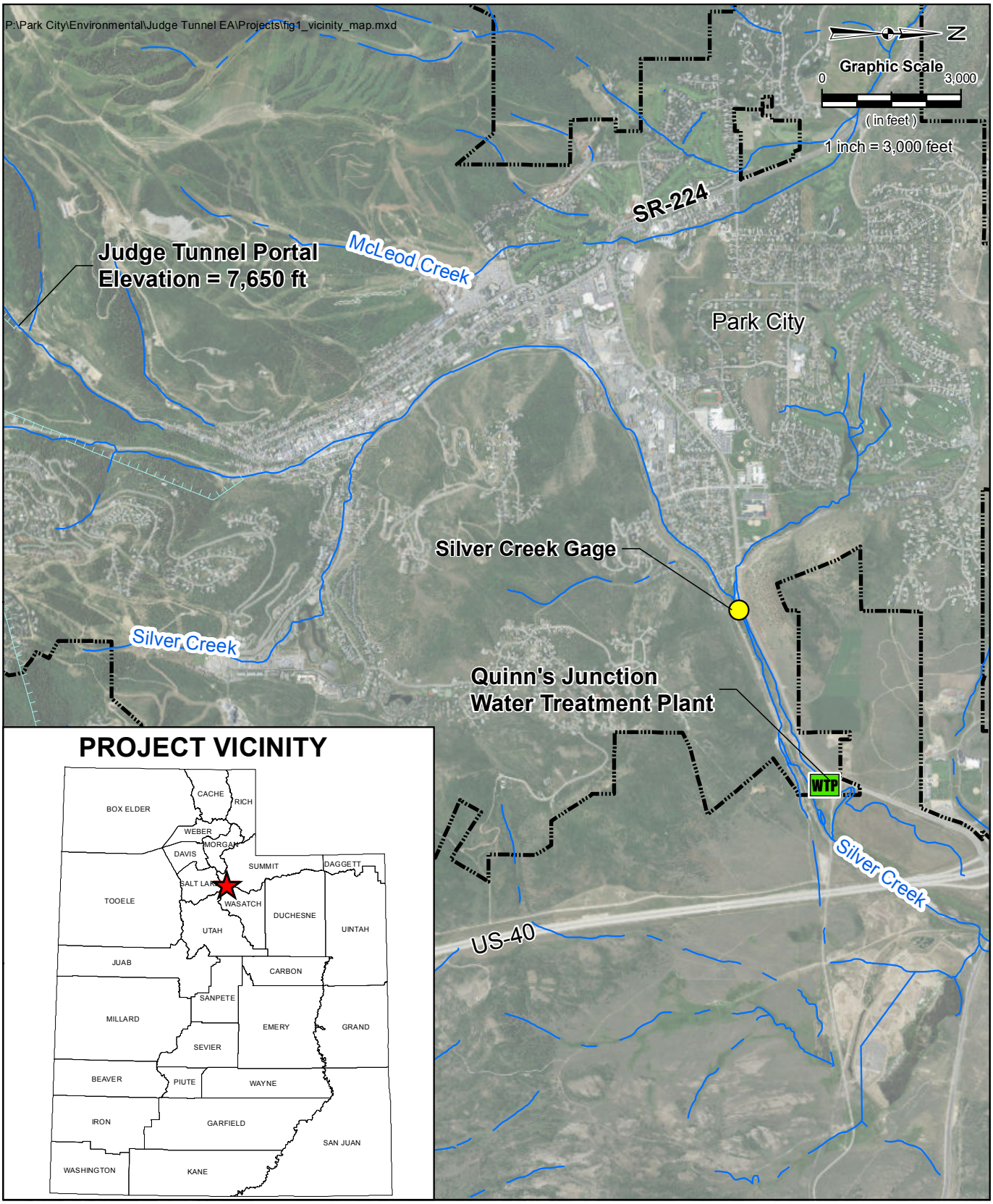


Figure 1B Judge Tunnel Flows to PCMC and Empire Creek Ditch



Stantec

Bowen Collins & Associates, Inc.
CONSULTING ENGINEERS

Legend

- *Park City Limits*
- *Streams*
- *Tunnels*

Client/Project
Park City Municipal Corporation
Judge Tunnel Water Line
Environmental Assessment

Figure No.
1.0

Title
Project Vicinity Map

2.0 ALTERNATIVES

This chapter identifies and compares several alternatives for the water pipeline. A no action alternative and four pipeline alignment alternatives were evaluated (Figure 2). These options are based upon topography, environmental considerations and property easements.

2.1 NO ACTION ALTERNATIVE

Under the no action alternative, the proposed pipeline would not be constructed. The portion of water that discharges from the waterworks at the Judge Tunnel portal to the drainage channel will not be collected and conveyed to the water system and will continue to be discharged to the tributary of Silver Creek.

2.2 PIPELINE ALIGNMENT ALTERNATIVES

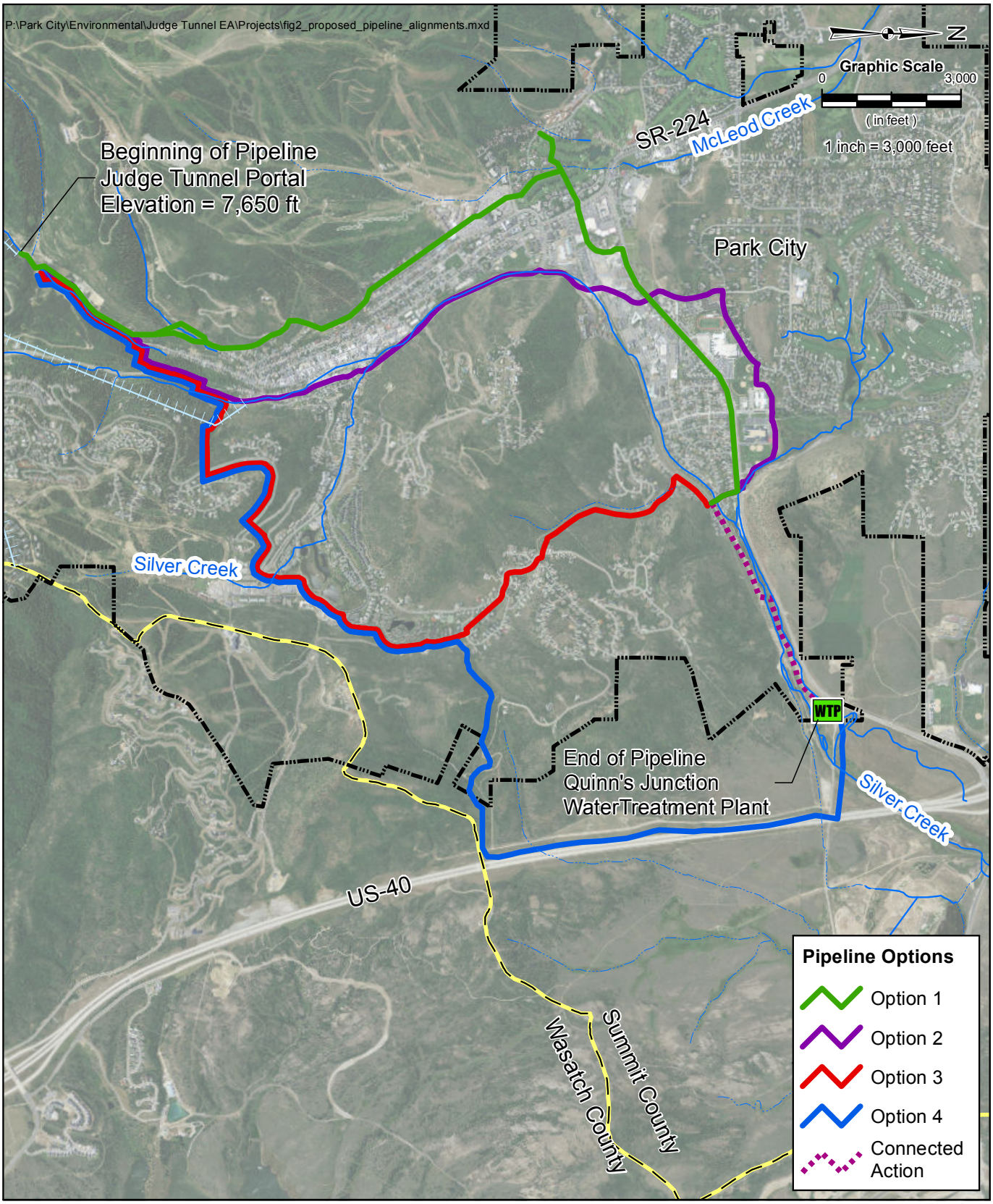
Four pipeline alignments were evaluated for the conveyance of the portion of water that discharges from the Judge Tunnel portal to the drainage channel. Each alignment was reviewed for land ownership, environmental impacts, schedule impacts, cost, long term maintenance, and fatal flaws. Based on this review, the proposed alignment for this project is Option 1 – Treasure Hill. This alignment option has the least private property impacts with 98% of the alignment following existing trails, public right of way, and Park City owned property, provides good access for maintenance, and provides the potential for future Judge Tunnel Water pretreatment if deemed necessary at a future water pretreatment plant planned for near Park City Golf Course.

2.2.1 Alignment Option 1 – Treasure Hill (Proposed Alternative)

This alignment is the proposed alternative for this project. This alignment goes down Empire Canyon road and heads northwest along an existing water line to the Woodside tank. It then continues north in the foothills through the Park City Mountain Resort and along west Park City on Lowell Avenue before coming through the Park City Golf Club course, then east down Homestake Road and Kearns Boulevard to connect to an existing pipeline on Wyatt Earp Way. This pipeline is 24,000 feet in length, with a portion in the Park City Soils Ordinance Boundary. Approximately 97% (20,300 feet) of the alignment is within existing roadways, trails, disturbed areas, or property already owned by Park City. This alignment requires crossing two ditches, one within the golf course and one in Empire Canyon. Both crossings may require a Clean Water Act Section 404 permit for the discharge of dredged or fill material into waters of the U.S. from the U.S. Army Corps of Engineers (Corps) and a Utah Stream Alteration Permit.)..

2.2.2 Alignment Option 2 – Marsac Avenue to Deer Valley Dr.

This alignment goes down Empire Canyon road and heads east up to Prospect Ridge, then drops down to Marsac Avenue, then to Deer Valley Drive. It ties into an existing waterline that goes along Deer Valley Drive and Bonanza Drive. The alignment then heads east toward the proposed water treatment plant. This pipeline is 23,000 feet in length, with a portion in the Park City Soils Ordinance Boundary. Approximately 74% (17,000 feet) of the alignment is within



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CONSULTING ENGINEERS

Legend

- *Park City Limits*
- *Streams*
- *Tunnels*

Client/Project
Park City Municipal Corporation
Judge Tunnel Water Line
Environmental Assessment

Figure No.
2.0

Title
Proposed Judge Tunnel Pipeline Alignments

existing roadways, trails, or disturbed areas. This alignment requires crossing Silver Creek, which will require a stream alteration permit from the State and a Clean Water Act Section 404 permit for the discharge of dredged and fill material into waters of the U.S. Wetlands are known in this area and will need to be formally delineated if impacted and a formal jurisdictional determination from the Corps will be required prior to permitting.

2.2.3 Alignment Option 3– Chatham Crossing

This alignment goes down Empire Canyon road and heads east up to Prospect Ridge. The alignment then travels down Prospect Ridge and drops down to Marsac Avenue. The alignment eventually drops down and goes along the Deer Valley ponds. It continues on Solamere Drive and heads north and follows an existing 30' water line easement north through the Chatham Crossing subdivision to the Park City Rail Trail where it heads east towards Wyatt Earp Way. This pipeline is 24,000 feet in length, with a portion in the Park City Soils Ordinance Boundary. Approximately 83% (20,000 feet) of the alignment is within existing roadways, trails, or disturbed areas. This alignment requires crossing Silver Creek near Deer Valley which will need a stream alteration permit from the State as well as a permit from the Corps of Engineer for the discharge of dredged or fill material into any waters of the U.S. pursuant to Clean Water Act Section 404. Wetlands are known in this area and will need to be formally delineated if impacted and a formal jurisdictional determination from the Corps will be required prior to permitting.

2.2.4 Alignment Option 4 – US-40 Frontage Road

This alignment goes down Empire Canyon road and heads east up to Prospect Ridge then drops down to Marsac Ave. The alignment continues east eventually following the easement to the Morning Star Estates Subdivision, and follows an existing 50' right-of-way then crosses through the Gillmor property. It then travels north along the Summit County frontage road to an existing dirt road on the south side of Silver Creek where it heads west then north across the rail trail and Silver Creek to the proposed water treatment plant. A portion of this alignment is located in Summit County. This pipeline is 31,400 feet in length. Approximately 83% (26,000 feet) of the alignment is within existing roadways, trails, or disturbed areas. This alignment is not in the Park City Soils Ordinance Boundary. This alignment requires crossing Silver Creek which will need a State stream alteration permit as well as a permit for the discharge of dredged or fill material into any waters of the U.S. pursuant to Clean Water Act Section 404. Wetlands are known in this area and will need to be formally delineated if impacted and a formal jurisdictional determination from the Corps will be required prior to permitting.

2.3 CONNECTED ACTIONS

A connected action to the proposed action is the installation of a water pipeline from Wyatt Earp Way to the Quinn's Water Treatment Plant. This connected action project was funded by Park City Municipal Corporation, and therefore was separate from the proposed project addressed in this EA. This pipeline segment is approximately 5,500 feet in length, and will connect the Judge Tunnel Pipeline that is the subject of this EA, from Wyatt Earp Way along the Rail Trail to Quinn's Water Treatment Plant. This project was completed in winter 2010.

2.4 GENERAL PROJECT SCENARIOS

The alignments have been evaluated based on action and no action alternatives.

Under a no action scenario, there is no Judge Tunnel pipeline project and the use of the Judge Tunnel water would remain the same until June 15, 2014 when the water could not be used for drinking due to antimony concentrations in accordance with per the Compliance Order/Enforcement Agreement between Park City and Utah Division of Drinking Water.

It is anticipated that the permit limits would not allow the discharge into the creek without treatment due to potential violations of surface water quality standards. The exact discharge limits are unknown at this time. The UPDES application was submitted by Park City in July 2011 and is still under review by the Utah Division of Water Quality. Additionally, without the project antimony levels in drinking water at the Empire/Judge waterworks may exceed the National Drinking Water Standard of 6 ppb.

The action alternatives to construct the Judge Tunnel Pipeline would include the following operational scenarios (applicable to all pipeline alignment alternatives):

1. **Location of Excess or Overflow Discharge Point**
   a. Existing location, near the Judge Tunnel. Overflow discharges are unlikely to continue at the existing location after the future UPDES permit limits goes into effect, or
   b. At QWTP, or.
   c. At a future treatment facility after treatment for future UPDES permit requirements.
2. **Water Quantity --** Average quantity of Judge Tunnel water discharged as overflow/excess or used for drinking water.
   a. Maintain current water overflow flow conditions. On average 285 acre-feet (ac-ft) per year is discharged from the Judge Tunnel into Silver Creek tributaries. On average the Judge Tunnel provides 1,130 ac-ft per year for drinking water use. However, this amount fluctuates and varies continuously.
   b. Use all of Judge Tunnel flow for drinking water and secondary irrigation water; on average reducing overflow discharges to 0 ac-ft and increasing drinking water and secondary water use to approximately 1400 ac-ft per year, depending on the yield of the Judge Tunnel.
3. **Drinking Water Treatment** – Judge Tunnel pipeline water continues to be used as a source of drinking water for Park City.
   a. Convey all drinking water to including the Judge Tunnel water QWTP for treatment and blending with other sources of drinking water. Antimony levels in drinking water are reduced by blending Judge Tunnel water with water from other sources.
   b. Spiro Tunnel WTP is replaced with a pre-treatment plant to treat Judge Tunnel water and Spiro Tunnel water for use in the PCMC raw water system that feeds QWTP. The water could be used for irrigation or treated at QWTP for use in the drinking water system.
   c. Treatment waste from the QWTP is sent to the Snyderville Basin Water Reclamation District (SBWRD) under a valid pretreatment permit (discharges to the wastewater sewer system). Currently PCMC has a pretreatment industrial discharge permit with SBWRD that allows the discharge of the waste stream from QWTP. During the period of the SBWRD temporary discharge permit, PCMC

monitors the water quality of the waste stream to determine appropriate dewatering methods or if one is required. If monitoring shows that standards set by the SBWRD permit may not be met, PCMC would evaluate the potential development of a dewatering facility at QWTP. The dewatering facility would remove solids in the waste stream, which can then be taken to an approved disposal site. See Appendix K for a copy of the PCMC current discharge permit issued by SBWRD.

4. **Overflow Treatment** – Water from Judge Tunnel not used in the drinking water system may require future treatment before discharge. Normal operations will utilize all Judge Tunnel water in the drinking water system and/or secondary water system. However, a future pretreatment plant is envisioned to treat Judge and potentially Spiro Tunnel water overflows that are not used in the QWTP. Any treatment facility discharging to Silver Creek would require an UPDES permit. Although the exact permit limits are not known, any future UPDES permit would include water quality based effluent limits (WQBELs) to ensure compliance with applicable water quality standards. Any WQBELs in the permit would need to be consistent with the waste load allocations in the Total Maximum Daily Load (TMDL) for Silver Creek. Treatment options under any such permit could include:
   a. No treatment needed. This option appears unlikely as the Clean Water Act requires dischargers to meet TBELs in their permits upon the date of permit issuance.
   b. Treatment of all or part of the water. Convey all Judge Tunnel water in the proposed pipeline to a future treatment facility to comply with UPDES permit and/or to QWTP for drinking water treatment and use. If the treatment facility could not initially meet its WQBELs, the anticipated compliance period for the UPDES permit would allow some discharges that exceed the applicable water quality criteria. Discharges resulting from the diversion of waste streams from any portion of the treatment facility or caused by factors beyond the reasonable control of the treatment facility operator would be subject, respectively, to the bypass or upset provisions in the UPDES permit or any applicable compliance agreement or order issued by the Utah Division of Water Quality.

3.0 RESOURCES, POTENTIAL IMPACTS AND MITIGATION MEASURES

3.1 SUMMARY OF ISSUES

Environmental resources were evaluated for existing conditions and potential impacts caused by the proposed project. These resources, potential impacts and recommended mitigating measures are discussed in this chapter. Four main environmental issues were identified during this analysis and are as follows:

1. Potential impacts to soils - PCMC Soils Ordinance; Refer to Section 3.3
2. Potential impacts to surface waters - Silver Creek TMDL and reduced stream flows; Refer to Section 3.4
3. Stream crossings necessary – Silver Creek and an unnamed ditch (tributary of McLeod Creek); Refer to Section 3.4
4. Potential impacts to wetlands; Refer to Section 3.5

3.2 GEOLOGY, SOILS, AND GROUNDWATER

The Study Area is located in the Middle Rocky Mountain Physiographic Province, which includes the Wasatch and Uinta Ranges. The project area is in the Wasatch Hinterland section (Stokes, 1986), bounded by the Provo River to the south and the Weber River to the north. Elevations of the Wasatch Mountains range between 5,000 and almost 12,000 feet in elevation. The project area elevation ranges from 6300 feet to over 7200 feet, with an average of approximately 6,600 feet above mean sea level.

Geologically, the majority of the Study Area consists of volcanic rock units and alluvial deposits, with sedimentary rocks adjacent to the southern portion of the project area (Bromfield and Crittenden, 1971). According to Bromfield and Crittenden (1971) geologic formations that are exposed within the project area include:

- Quaternary Alluvium, Terrace Gravels, and Glacial Outwash sediments (clay, silt, sand, and gravel)
- Tertiary Keetley Volcanics, including
  - Silver Creek Breccia (light gray rhyodacitic to andesitic breccia, lahar, and tuff)
  - Richardson Flat Rhyodactic flows and subordinate breccias
- Triassic Ankareh Formation (mudstone, silty sandstone, sandstone, and conglomerate)
- Triassic Thaynes Formation (limestone, siltstone, and sandstone)
- Triassic Woodside Formation (shale and siltstone)
- Permian Park City Formation (limestone, siltstone and sandstone)

Landslides have been observed in an area west of US-40 and south of SR-248 apparently formed in the Quaternary Alluvium on steep slopes.

Structurally, the Study Area lies mainly within an erosional valley formed by Silver Creek flowing across and through the Keetley Volcanics. The sedimentary rocks in the southern portion of the Study Area generally strike to the northeast and dip to the northwest ranging from 20 to 55 degrees. The sedimentary rocks are complexly faulted and folded (Bromfield and Crittenden, 1971).

According to Bromfield and Crittenden (1971), a number of faults cross the proposed alignment, the largest of which is the Frog Valley Thrust Fault (Figure 3). There are apparently no data available to indicate if these faults are still active.

According to the EPA (2005) groundwater at the Study Area occurs in shallow unconsolidated aquifers below the original ground surface. These aquifers are primarily fed from local surface water recharge and are small and local in nature. Groundwater flow is generally from southeast to northwest toward Silver Creek. According to Holmes and others (1985) the unconsolidated alluvium is approximately 100 feet thick in the Silver Creek drainage.

Below the shallow aquifers is the bedrock aquifer of the Keetley Volcanics, which occurs at various depths and contains varying amounts of ground water depending upon local conditions. The hydraulic gradient in all aquifers is generally upward, but the connection between the bedrock aquifer and the shallow aquifers is weak (EPA, 2005).

Given that the proposed project is located in an area known to have high levels of metals that were associated with historic mining activities, soils and groundwater require special handling, and must be in accordance with local, State and Federal requirements. Please refer to Section 3.3 for further information.

3.2.1 Potential Impacts and Recommended Mitigation Measures

3.2.1.1 No Action Alternative

No impacts to these resources under this alternative, mitigation not necessary.

3.2.1.2 Proposed Pipeline Alignments

3.2.1.2.1 Alignment Option 1 - Treasure Hill (Proposed Alternative)

Temporary surface soil impacts during construction are anticipated. Construction erosion and sediment controls will serve to minimize these impacts. Refer to Section 3.4.3 for further information regarding these measures.

Construction of the pipe will include either restrained joints or high density polyethylene HDPE pipe to minimize impacts due to faults or landslides. A geotechnical investigation will be performed on the approved alignment. Construction documents will address any additional appropriate pipe construction methods or materials.

3.2.1.2.2 Alignment Option 2 – Marsac Avenue to Deer Valley Drive

Potential impacts and mitigation measures are provided in Section 3.2.1.2.1 above.

3.2.1.2.3 Alignment Option 3 - Chatham Crossing

Potential impacts and mitigation measures are provided in Section 3.2.1.2.1 above.

3.2.1.2.4 Alignment Option 4 - US-40 Frontage Road

Potential impacts and mitigation measures are provided in Section 3.2.1.2.1 above.

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Graphic Scale
0 2,000
(in feet)
1 inch = 2,000 feet

SR-224

McLeod Creek

Park City

Kimball Creek

Judge Tunnel Portal
Elevation = 7,650 ft

Silver Creek

Drain Tunnel Creek

WTP

Water
Treatment
Plant

Silver Creek

US-40

Stantec

Bowen Collins
& Associates, Inc.
CONSULTING ENGINEERS

Pipeline Options

- Option 1
- Option 2
- Option 3
- Option 4
- Connected Action

Faults

- Fault, dashed where approximate
- Fault, Ball and Bar on downthrown side
- Thrust Fault, dashed where approximate dotted where conceled, dashed where inferred

Legend

- *Park City Limits*
- Streams
- Tunnels

Client/Project
Park City Municipal Corporation
Judge Tunnel Water Line
Enviromental Assessment

Figure No.
3.0

Title
Fault Lines Near the Judge Tunnel Alignments

3.3 GENERATED SOILS REGULATORY CLASSIFICATION AND UTAH DEPARTMENT OF ENVIRONMENTAL QUALITY (DEQ) REGULATED SITES

Historic ore mining and processing activities have resulted in mine tailing waste in and around Park City; this has led to impaired soils and water. Such waste, when generated from the "extraction, beneficiation, and processing of ores and minerals" are exempt from regulation as hazardous waste under the federal Resource Conservation and Recovery Act (RCRA) per the Bevill Amendment to RCRA. 42 U.S.C. § 6921(b)(3)(A)(ii). Such wastes are, however, regulated under RCRA Subtitle D. 51 Fed. Reg. 24496, 24501 (July 3, 1986); 40 C.F.R. Part 257 and may be regulated by Park City's Landscape and Maintenance of Soil Cover ordinance (Soil Ordinance).. In addition to Part 257 requirements, such waste may be subject to corrective action and imminent hazard requirements, or may become subject to RCRA Subtitle C if mixed with non-exempt waste.

In order to minimize exposure to these materials, Park City has established an ordinance that requires landowners to appropriately manage and remediate potentially contaminated historic mining waste materials. This ordinance includes a soils boundary in which mining wastes may be present and must be remediated in accordance with the Soil Ordinance. The municipal ordinance requires that parties, who request development permits within the Soil Ordinance boundary, submit appropriate studies and plans to address environmental issues associated with the historic mining waste. Material management plans must be developed, submitted and approved to show the historic mining waste is managed consistent with Bevill-exempt waste standards of care. The Park City Soil Ordinance is referenced and summarized below:

- Under Title 11 Chapter 15 Park City's Soil Ordinance mandates historic Bevill-exempt mine waste is to be managed and disposed of in accordance with the Landscaping and Maintenance of Soil Cover institutional control. This ordinance is agreed upon by the US Environmental Protection Agency, and is a component of the Environmental Management System approved by EPA and the Utah Department of Environmental Quality in September 2004.

The preferred alignment is within ½ mile of the Empire Canyon Removal Action under the EPA Superfund Program. Final design for this alignment must be coordinated with EPA to avoid or mitigate impacts to this site. The alignment also may impact the Alice Load Voluntary Cleanup Program site. Final design for the alignment also must be coordinated with the EPA Region 8 Superfund Program and the Utah Division of Environmental Response and Remediation (DERR) where the alignment and its construction may impact a planned removal or remedial action in the vicinity of Kearns Boulevard and Wyatt Earp Way as described in Section 2.2.1.).

In addition, a review of state regulatory websites was conducted to locate potential hazardous waste sites within the project study area. The following websites were utilized:

- Division of Environmental Response and Remediation
  http://www.environmentalresponse.utah.gov/

- Division of Solid & Hazardous Waste
  http://www.hazardouswaste.utah.gov/

Following a review of the websites listed above, documented and permitted hazardous waste and CERCLA sites were identified and are presented in Table 2. Table 3 presents information regarding underground storage tanks (USTs), leaking underground storage tanks (LUSTs) and Voluntary Cleanup Programs (VCPs) in the Study Area. Figure 4 presents the proposed alignments with the PCMC soils ordinance identified, as well as identified regulated sites, underground storage tank locations and voluntary cleanup program sites within the project area.

Table 2 Documented DEQ CERCLIS Sites

Sites	System ID	NAICS * Code	Description	Handler Type
Albertsons #365	UTR000007898	44511	Supermarkets & Other Grocery	Small Generator
Chevron Resources Company	UTD000716415	None	N/A	Small Generator
Deer Valley Resort Inc.	UTD055329650	None	N/A	Conditionally Exempt Small Generator
Edgemont Cleaners	UTR000006726	None	N/A	Conditionally Exempt Small Generator
Park City Municipal	UTD988078986	None	N/A	Small Generator
Park City School Bus Garage	UTD988073060	None	N/A	Conditionally Exempt Small Generator
Plaza Dry Cleaners	UTD988069886	None	N/A	Conditionally Exempt Small Generator
Union Square	UTR000008995	236116	New Multifamily Housing Construction (except Operative Builders)	Small Generator
Richardson Flats	UTD980952840		Proposed NPL	
Empire Canyon	UT0002005981		Removal Action	

*North American Industry Classification System

Table 3 UST/LUST/VCP Locations

Site	DERR ID	Site Type
Wasatch Mtn. State Park	1100062	UST
Wasatch Mtn. State Park Golf Shop	1100063	UST
Hailstone Maintenance Facility	1100064	UST
Alta Peruvian Lodge	4000019	UST
Alta Ski Lifts Co.	4000020	UST
Brighton Ski Area	4000099	UST
Snowbird Corp.	4000951	UST
Solitude Ski Resort Co.	4001332	UST
U.S.West 673140	4001799	UST
Parks-Gold Maintenance Bldg.	7000006	UST
Butko Texaco	7000009	UST
Deer Valley Resort Co.	7000016	UST
Park City Batch Plant	7000020	UST
U.S.West 673350	7000030	UST
Bottom Vehicle Maintenance Shop	7000033	UST
Clemintine Ski Run	7000034	UST
Park City Ski Corp.	7000035	UST
Summit	7000036	UST
School Bus Garage	7000037	UST
Public Works Service Cntr.	7000038	UST
Park City Self Serv.	7000039	UST
7-Eleven No. 53603 /1833-24022	7000051	UST
7-Eleven No.53606 Blue Roof	7000054	UST
The Canyons	7000060	UST
Maverik No.317	7000065	UST
Top Stop C-15	7000072	UST
Park City Service Center	7000074	UST
Ontario No. 3 Shaft	7000085	UST
Carl Winters Middle School	7000110	UST
Payday Lift Top Terminal	7000113	UST
Payless Drug Store	7000118	UST
Bill Mawhinney Motor, Inc.	7000120	UST
The 1725 Bonanza Partnership	7000121	UST
Main Street Marketplace Mall	7000122	UST
Park City Transportation	7000123	UST
Park City Park City Fire Service District	7000131	UST
Stein Erickson Lodge	7000134	UST
Kimball Arts Center	7000140	UST
Park City Medical Center	7000147	UST
Osguthorpe Dairy	7000112	UST
Old Town Intermodal Transit	C019	VCP
Alice Lode	C043	VCP

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Graphic Scale
0 2,000
(in feet)
1 inch = 2,000 feet

Judge Tunnel Portal
Elevation = 7,650 ft

Water Treatment Plant

Park City

Pine Creek
McLeod Creek
Kimball Creek
Drain Tunnel Creek
Silver Creek
SR-224
US-40

Hazardous Waste Sites		
Number	Handler ID	Name
1	UTR000007898	Albertsons #365
2	UTD000716415	Chevron Resources Company
3	UTD980952840	Richardson Flat
4	UTR000006726	Edgemont Cleaners
5	UTD988078986	Park City Municipal
6	UTD988073060	Park City School Bus Garage
7	UTD988069886	Plaza Dry Cleaners
8	UTR000008995	Union Square
9	UTD055329650	Deer Valley Resort Inc.
10	UT0002005981	Empire Canyon

Voluntary Clean-up Sites		
Object ID	DERR ID	Site Name
11383	C019	Old Town Intermodal Transit
11399	C043	Alice Lode

DEQ Regulated Underground Storage Tanks

Object ID	Facility ID	DERR ID	Location Name
1070587	5990	7000006	Parks-Golf Maintenance Bldg.
1070589	5992	7000009	Butko Texaco
1070595	5999	7000016	Deer Valley Resort Co.
1070599	6003	7000020	Park City Batch Plant
1070608	6012	7000030	U.S.West 673350
1070611	6015	7000033	Bottom Vehicle Main Shop
1070612	6016	7000034	Clemintine Ski Run
1070613	6017	7000035	Park City Ski Corp
1070614	6018	7000036	Summit.
1070615	6019	7000037	School Bus Garage
1070616	6020	7000038	Public Works Service Cntr.
1070617	6021	7000039	Park City Self Serv.
1070638	6043	7000065	Maverik No.317
1070642	6047	7000072	Top Stop C-15
1070643	6048	7000074	Park City Service Center
1070652	6058	7000085	Ontario No. 3 Shaft
1070673	6080	7000110	Carl Winters Middle School
1070674	6083	7000113	Payday Lift Top Terminal
1070677	6088	7000118	Payless Drug Store
1070679	6090	7000120	Bill Mawhinney Motor, Inc.
1070680	6091	7000121	The 1725 Bonanza Partnership
1070681	6092	7000122	Main Street Marketplace Mall
1070682	6093	7000123	Park City Transportation
1070686	6100	7000131	Park City Fire Service District
1071159	6687	7000134	Stein Erickson Lodge
1071362	7050	7000140	Kimball Arts Center
1071515	7413	7000147	Park City Medical Center
1071630	6082	7000112	Osguthorpe Dairy

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CONSULTING ENGINEERS

Pipeline Options
- Option 1
- Option 2
- Option 3
- Option 4
- Connected Action

Regulated Sites
- Hazardous Waste Sites
- UST Sites
- VCP Sites
- Park City Soils Ordinance Zone

Legend
- *Park City Limits*
- Streams
- Tunnels

Client/Project
Park City Municipal Corporation
Judge Tunnel Water Line
Enviromental Assessment

Figure No.
4.0

Title
Judge Tunnel Alignment
DEQ Regulated Sites

3.3.1 Potential Impacts and Recommended Mitigation Measures for Generated Soils Regulatory Classification and Regulated Sites

3.3.1.1 No Action Alternative

No issues relating to the No Action Alternative.

3.3.1.2 Proposed Pipeline Alignments

3.3.1.2.1 Alignment Option 1 - Treasure Hill (Proposed Alternative)

A portion of this alignment will be within the PCMC soils ordinance boundary and may require mine waste soil remediation of removal and disposal in accordance with the ordinance and federal law, as applicable. Additionally, the final design must be coordinated with the EPA Region 8 Superfund Program and the United Park City Mines Company (which is responsible for Operation and Maintenance of the Empire Canyon Removal Action) to meet Removal Action O & M requirements.

This alignment is close to the following regulated sites:

- VCP C043 Alice Lode
- UST 1070677 Payless Drug Store
- Hazardous Waste Site 1 Albertson's #365
- Hazardous Waste Site 4 Edgemont Cleaners
- UST 1070680 The 1725 Bonanza Partnership
- UST 1070638 Maverick No. 317

Avoidance of these sites is recommended; coordination with the Utah Division of Environmental Response and Remediation and the Utah Division of Solid and Hazardous Waste may be necessary to understand the regulated boundary for each site.

Mitigation measures during construction should include the placement of trench plugs within the trench to eliminate the potential for groundwater to be conveyed through the trench. Construction documents should also include construction protocol, specifically segregating mine waste from clean soils.

The PCMC soils ordinance should be referenced during construction to direct the protocol when construction workers come into contact with mine waste. To prevent contact with mine waste, construction workers should reference Appendix A, Soils Ordinance Worker Health and Safety Notice.

The mine waste soils found within the Soil Ordinance boundary shall be handled by PCMC or the pipeline contractor as follows:

1. Contaminated soils will be capped in place;

2. Hauled and disposed of as per the Soil Ordinance to an approved mine waste soils storage or disposal facility.

Soils outside the Soil Ordinance boundary will be handled in accordance with Soil Management Plans prepared by a qualified environmental engineer at URS Corporation. The Soil Management Plans have not been completed.

3.3.1.2.2 Alignment Option 2 - Marsac Avenue to Deer Valley Drive

A portion of this alignment will be within the PCMC Soil Ordinance Boundary. Waste handling and worker safety procedures discussed for Section 3.3.1.2.1 apply to this option as well. Additionally, the final design must be coordinated with the EPA Region 8 Superfund Program and the United Park City Mines Company (which is responsible for Operation and Maintenance of the Empire Canyon Removal Action) to meet Removal Action O & M requirements.

This alignment is close to the following regulated sites:

- VCP C019 Old Town Intermodal Transit
- Hazardous Waste Site UTD988069886 Plaza Dry Cleaners
- UST 1070680 The 1725 Bonanza Partnership
- UST 1070638 Maverik No. 317

Avoidance of these sites is recommended; coordination with the Utah Division of Environmental Response and Remediation and the Utah Division of Solid and Hazardous Waste may be necessary.

3.3.1.2.3 Alignment Option 3 - Chatham Crossing

This option does not enter the PCMC Soils Ordinance Boundary, and there are no Utah Department of Environmental Quality (DEQ) regulated sites nearby. If mine waste is encountered, waste handling and worker safety procedures discussed for Section 3.3.1.2.1 apply to this section. .Additionally, the final design of must be coordinated with the EPA Region 8 Superfund Program and the United Park City Mines Company (which is responsible for Operation and Maintenance of the Empire Canyon Removal Action) to meet Removal Action O & M requirements

3.3.1.2.4 Alignment Option 4 – US-40 Frontage Road

This option does not enter the PCMC Soil Ordinance Boundary, however, it does come close to the boundary. There are no DEQ regulated sites nearby. If mine waste is encountered, waste handling and worker safety procedures discussed for Section 3.3.1.2.1 apply to this section. Additionally, the final design must be coordinated with the EPA Region 8 Superfund Program and the United Park City Mines Company (which is responsible for Operation and Maintenance of the Empire Canyon Removal Action) to meet Removal Action O & M requirements.

3.4 WATER RESOURCES

This section provides a review of the water resources in the Study Area, including water quality and water quantity. This review was conducted in order to evaluate potential impacts from the proposed project.

3.4.1 Water Quality

This section addresses water quality in relation to impaired waterbodies, stormwater runoff, stream crossings and the potential impacts on water quality and recommended mitigation measures. In addition, this section addresses the current practice of discharging turbid water to Empire Creek from waterworks near the Judge Tunnel portal.

3.4.1.1 Impaired Waterbodies

Silver Creek and its tributaries are listed by the State of Utah, Division of Water Quality (DWQ) as a Category 4A waterbody from the headwaters to the confluence with the Weber River. Category 4A is for those waterbodies that have been classified as being impaired and a Total Maximum Daily Load (TMDL) study has been completed. Impairment is based upon the designated use for Silver Creek (Class 3A: Protected for cold water species of game fish and other cold water aquatic life). A TMDL study was completed and approved by EPA in 2004 (Utah 2006 Integrated Report Volume 1 – 305(b) Assessment). This study established defined targets for the pollutants of concern and an implementation strategy designed to reduce the levels of pollutants in the creek. Silver Creek is listed for elevated levels of cadmium and zinc; the probable cause is historical mining activities. In addition, Silver Creek is listed as water quality impaired due to elevated arsenic and total dissolved solids 2010. See Utah 2008 and 2010 Integrated Reports approved by EPA in February 2012.

Water quality data for Silver Creek is available through STORET, USGS and EPA. STORET is a repository for data gathered by various agencies universities, private citizens, and others; data is available on EPA's STORET website (http://www.epa.gov/storet/). USGS has conducted two studies on Silver Creek in 2000 and 2002. EPA also conducted sampling in 2000. This monitoring data supported the 303(d) listing and was utilized in setting the TMDL targets identified in Table 4.

Table 4 TMDL Water Quality Endpoints

Constituent (total recoverable)	Chronic (mg/L)
Zinc	0.39
Cadmium	0.0008*

*Based on hardness of 400 mg/L $CaCO_3$

Accordingly, the main implementation strategy for attaining the designated use is to clean up or isolate areas disturbed by historic mining activities. The following best management practices (BMPs) were identified in the TMDL:

1. Slope protection – minimize and protect exposed soil surfaces to help reduce erosion and the associated discharge of sediment to nearby streams. BMPs include mulching, hydromulching, geotextile, matting, etc.
2. Storm runoff routing – stormwater runoff can carry contaminated sediments from a contaminated site by either direct runoff or indirectly through groundwater. BMPs include silt fencing, straw bales, swales/ditches, berms, etc.
3. Isolation measures – isolating contaminated soils either onsite or removal to another location. BMPs include capping with an impervious surface, diversion of runoff, removal to a secure site, etc.
4. Temporary erosion control – requiring approved erosion control plans for stormwater pollution control during construction activities. BMPs include silt fencing, vegetative buffers, sedimentation ponds, etc.
5. Water treatment BMPs – removal of pollutants via treatment. Examples of BMPs include separators, treatment wetlands, etc.

These practices will be taken into consideration as appropriate in the required Stormwater Pollution Prevention Plan and Erosion Control Plan as discussed below in Section 3.4.1.2.

It is anticipated that there will be a benefit to the water quality in Empire Creek due to the removal of the discharge of this turbid water.

3.4.1.2 Stormwater

Utah Division of Water Quality requires coverage under the Storm Water General Permit for Construction Activities for projects disturbing one acre or greater. This permit requires the development of a Storm Water Pollution Prevention Plan (SWPPP). The construction of the Judge Tunnel Pipeline will require a General Storm Water Permit and a SWPPP.

The Utah Division of Water Quality (DWQ) issues Utah Pollutant Discharge Elimination System (UPDES) permits for the discharge of stormwater associated with municipal activities under Title R317-8 of the Utah Clean Water Act (Utah, 2007). While Park City is not currently subject to these requirements, PCMC has implemented a stormwater management plan and ordinances in order to control the release of stormwater pollution. Park City implements a Stormwater Management Plan designed to reduce discharges of polluted stormwater runoff to the streams in the area. The objectives of this plan are as follows:

- Increase public awareness and involvement in water quality issues
- Increase enforcement and effectiveness of erosion and sediment controls at construction sites
- Discourage development in environmentally sensitive areas
- Pro-actively implement measures to meet EPA Phase II requirements

3.4.1.3 Stream Crossings

Crossing of Silver Creek or a ditch which is a tributary of McLeod Creek is necessary. A Stream Alteration Permit from the Utah Department of Natural Resources, Division of Water Rights (DWR) is required for a Silver Creek crossing (Section 73-3-29 of the Utah Code) and a Clean Water Act Section 404 permit for the discharge of dredged or fill material into waters of the U.S. may be required for the ditch crossing. Coordination with the US Army Corps of Engineers and the Utah DWR is recommended to ensure proper permitting of this activity.

3.4.2 Water Quantity

Hydrologic data is limited for this watershed, consequently, the Silver Creek TMDL recommends additional monitoring to better understand the hydrology of this watershed. The TMDL provides a brief review of weather data and flow data to estimate a water budget. This information suggests that the majority of the water exiting the watershed is not through surface flow, but rather through evapotranspiration, groundwater recharge, and other mechanisms. However, additional studies need to be conducted to further define this hydrologic system.

Flow data is available from a USGS gauging station located on Silver Creek and is presented in Table 5.

Table 5 USGS Silver Creek Stream Gauge Results

Site Name	Gauge No.	Ave. Annual Flow (cfs)	Max. Recorded Flow (cfs)	Water Years
Silver Creek (near Silver Creek Junction)	10129900	5.9	80 (2006)	(2002-2012)
Silver Creek (near Silver Creek Junction)	10129900	6.8	150 (2011)	(2008-2012)

Appendix A, Section 3.B.(6)(a) of Summit County/Park City Ordinance 381-A requires the flow rate of runoff from the development site not to exceed the pre-development runoff rate. Implementation of post-construction structural control measures will serve to ensure compliance with this ordinance, and minimize impacts caused by stormwater runoff.

Under normal circumstances, all of the water from the Judge Tunnel Portal is diverted into the existing PCMC water delivery system, and no water is discharged into Silver Creek tributaries. There are particular conditions which require bypassing the drinking water system, resulting in a temporary discharge to the drainage channel. This water is discharged during periods of excessive flows and during tunnel maintenance, and does not occur on a regular basis. There are other sources of water to this drainage channel, including stormwater and other tributaries, yet at times, the channel is dry.

The Judge Tunnel Pipeline Project has the potential to eliminate the discharge of water from Judge Tunnel into Empire Creek. Table 1 in Section 1.3 shows historical flow volumes from Judge Tunnel into Empire Creek and volumes for Silver Creek through the Silver Maple Claims

Wetlands. In order to quantify the impact on the Silver Maple Claims Wetlands, PCMC and the U.S. Fish and Wildlife Service, in partnership with the Bureau of Land Management, which owns the Silver Maple Claims Wetland, evaluated historical data while considering the nature of the flow patterns and system losses. Results of this evaluation and a proposed mitigation plan are shown in Appendix O.

3.4.3 Potential Impacts and Recommended Mitigation Measures for Water Quality

3.4.3.1 No Action Alternative

The discharge of water would continue. No impacts to water quality under this alternative.

3.4.3.2 Proposed Pipeline Alignments

3.4.3.2.1 Alignment Option 1 - Treasure Hill (Proposed Alternative)

Temporary impacts to water quality may occur during the installation of this pipeline. These impacts can be minimized by implementing erosion and sediment control best management practices required by state and local permits. The development and implementation of a Stormwater Pollution Prevention Plan is required by these permits. In addition, the following stipulations are required in order to meet the conditions established in the Silver Creek TMDL:

1. Slope protection
2. Storm runoff routing
3. Isolation measures
4. Temporary erosion control

Compliance with terms established in a Clean Water Act Section 404 permit and a Utah Stream Alteration Permit may be required for crossing the ditch which is a tributary of McLeod Creek.

3.4.3.2.2 Alignment Option 2 - Marsac Avenue to Deer Valley Drive

Potential impacts and mitigation measures are provided in Section 3.4.3.2.1 above.

3.4.3.2.3 Alignment Option 3 – Chatham Crossing

Potential impacts and mitigation measures are provided in Section 3.4.3.2.1 above.

3.4.3.2.4 Option 4 – US-40 Frontage Road

Potential impacts and mitigation measures are provided in Section 3.4.3.2.1 above.

3.4.4 Potential Impacts and Recommended Mitigation Measures for Water Quantity

3.4.4.1 No Action Alternative

The discharge of water would continue. No impacts to water quantity under this alternative.

3.4.4.2 Proposed Pipeline Alignments

3.4.4.2.1 Alignment Option 1 - Treasure Hill (Proposed Alternative)

Impacts to water quantity in Empire and Silver Creeks will occur due to the installation of this pipeline. As proposed, all of the Judge Tunnel flow would be used for drinking water and secondary irrigation water; on average reducing overflow discharges to 0 ac-ft and increasing drinking water and secondary water use per year.

The decreased flows to the Silver Maple Claim Wetlands, which typically receive overflows from Judge Tunnel, will be mitigated per Appendix O, which also describes water rights and sources that will be used to mitigate flows.

It should be noted that in the future, there may be cleanup actions at the Silver Maple Claims wetland. The historic tailings/mine waste deposited in the wetland may be removed and the wetlands restored under a future Superfund (CERCLA) and Natural Resource Damage Claim actions.

3.4.4.2.2 Alignment Option 2 - Marsac Avenue to Deer Valley Drive

Potential impacts and mitigation measures are provided in Section 3.4.4.2.1 above.

3.4.4.2.3 Alignment Option 3 – Chatham Crossing

Potential impacts and mitigation measures are provided in Section 3.4.4.2.1 above.

3.4.4.2.4 Option 4 – US-40 Frontage Road

Potential impacts and mitigation measures are provided in Section 3.4.4.2.1 above.

3.5 WETLANDS AND RIPARIAN HABITAT

A wetland assessment was conducted as a preliminary review of the study area to determine whether potentially jurisdictional wetlands may be present within the study area. This assessment was performed in order to provide recommendations for potential Section 404 permitting needs and compliance actions under the Clean Water Act for the discharge of dredged or fill material into waters of the U.S. The U.S. Army Corps of Engineers (Corps) requires a wetland delineation to be submitted in conjunction with Clean Water Act Section 404 permits to exhibit the limits and extents of jurisdictional wetlands. This assessment is not a formal wetland delineation - wetland areas are approximated and intended for advisory and planning purposes only. Any proposed impacts requiring Clean Water 404 permits will require a formal wetland delineation submittal to the Corps as well as a Clean Water Act jurisdictional determination completed by the Corps.

The wetland assessment performed herein is in accordance with the 1987 USACE Wetland Delineation Manual. Wetlands must exhibit three parameters to meet the USACE definition of a wetland: hydrophytic vegetation, hydric soils, and hydrology. Test holes were not excavated nor were sample points with existing vegetation percentages recorded for this wetland assessment. Available data was analyzed to determine if hydrophytic vegetation, hydric soils and hydrology may potentially be present on the project site. The U.S. Fish and Wildlife Service's National Wetland Inventory (NWI) maps for the area were used as a screening tool to identify potential wetlands on the subject property. The NWI Map exhibits wetlands based on the presence of wetland vegetation as determined by aerial photo interpretation and statistical sampling. Utah State University's GAP Analysis was used to identify types of vegetative cover including hydrophytic vegetation. The "*Soil Survey of the Summit Area, Utah, Parts of Summit, Salt Lake and Wasatch Counties, Utah*" published online for the U.S. Department of Agriculture's Natural Resource Conservation Service has mapped the soils in the study area. These studies were used to identify potential wetland areas in the project area.

Wetlands were mapped for a limited area in the vicinity of the water treatment plant as part of a formal wetland delineation for the PCMC Quinn's Junction Water Treatment Plant and Raw Water Line project. This information was also used as part of the wetland assessment.

A site visit was conducted by Stantec in September 2010 where the wetlands on the project were surveyed using a handheld Trimble GeoXT. An additional site visit was made by Bowen Collins & Associates on the updated alignment in June 2012. The Deer Valley Ponds and the Silver Creek riparian area and wetlands will not be impacted by the preferred alignment (Option 1); however, there are potential, unmapped wetlands along the south side of Kearns Boulevard near the end of the preferred alignment. If disturbances of these areas are expected to occur, a formal wetland delineation, state stream alteration permit, and application for a Nationwide Permit will need to be obtained for the temporary impacts of construction.

See Appendix J for field vegetation survey listing existing plants that could be used in the planning restoration.

3.5.1 Vegetation

Utah State University's GAP Analysis was used to identify types of cover in the study area. Cover types are listed by the principal or dominant plant species and may include prevalent associated species that may have a strong presence in localized areas within the cover type (see Figure 5). The complete list of cover types are listed below and details are provided in Appendix B.

Table 6 Vegetative Cover Types

S006	ROCKY MOUNTAIN CLIFF AND CANYON
S023	ROCKY MOUNTAIN ASPEN FOREST AND WOODLAND
S024	ROCKY MOUNTAIN BIGTOOTH MAPLE RAVINE WOODLAND
S030	ROCKY MOUNTAIN SUBALPINE MESIC SPRUCE-FIR FOREST AND
S031	ROCKY MOUNTAIN LODGEPOLE PINE FOREST
S032	ROCKY MOUNTAIN MONTANE DRY-MESIC MIXED CONIFER FOREST
S034	ROCKY MOUNTAIN MONTANE MESIC MIXED CONIFER FOREST AND
S039	COLORADO PLATEAU PINYON-JUNIPER WOODLAND
S046	ROCKY MOUNTAIN GAMBEL OAK-MIXED MONTANE SHRUBLAND
S071	INTERMOUNTAN BASINS MONTANE SAGEBRUSH STEPPE
S078	INTERMOUNTAIN BASINS BIG SAGEBRUSH STEPPE
S083	ROCKY MOUNTAIN SUBALPINE MESIC MEADOW
S085	SOUTHERN ROCKY MOUNTAIN MONTANE-SUBALPINE GRASSLAND
S091	ROCKY MOUNTAIN SUBALPINE RIPARIAN SHRUBLAND
S102	ROCKY MOUNTAIN ALPINE MONTANE WET MEADOW
N11	OPEN WATER
N21	DEVELOPED, OPEN SPACE – LOW INTENSITY
N22	DEVELOPED, MEDIUM – HIGH DENSITY
N80	AGRICULTURE

The GAP Analysis exhibits the study area as being dominated by Intermountain Basins Montane Sagebrush Steppe (S071), Developed, Medium - High Intensity (N22) and Developed, Open Space - Low Intensity (N21). The Intermountain Basins Montane Sagebrush Steppe is typically comprised of upland sagebrush and grass species. Developed, Medium - High Intensity is typically a mix of single family, apartments and commercial/industrial with 50 - 100% impervious surfaces. Developed, Open Space - Low Intensity includes single family housing, landscaped areas, parks and golf courses with 20 - 49% impervious surfaces.

Some areas of hydrophytic vegetation are listed for the study area indicating potential wetland areas. The cover types are Rocky Mountain Subalpine-Montane Riparian Shrubland (S091), Rocky Mountain Subalpine-Montane Wet Meadow (S102) and Open Water (N11). Areas of impact to hydrophytic vegetation and open water are estimated for each of the proposed alignments in Table 7.

Table 7 Area of Impact to Hydrophytic Vegetation and Agricultural Land

Alignment	Area of Impact (acres)[1]	
	Hydrophytic Vegetation	Open Water
Option 1: Treasure Hill	0	0.17
Option 2: Marsac-Deer Valley	0.01	0.5
Option 3: Chatham Crossing	0	0
Option 4: US-40 Frontage Rd.	0.9	0

[1] Areas were determined assuming a 20-foot corridor.

The majority of the hydrophytic vegetation is located in the Silver Creek Corridor near the water treatment plant location. The area designated as Open Water (N11) is located in a developed area. Based on observations made from aerial imagery, it is unlikely that open water is actually present.

3.5.2 Soils

The Soil Conservation Service's published studies "*Soil Survey of the Summit Area, Utah, Parts of Summit, Salt Lake and Wasatch Counties, Utah*" exhibits thirteen (13) different soil units in the study area (see Figure 6). The soils units are listed in the following table:

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Judge Tunnel Portal
Elevation = 7,650 ft

SR-224
McLeod Creek
Park City
Silver Creek
Drain Tunnel Creek
WTP
Water Treatment Plant
US-40

N
Graphic Scale
0 N80 2,000
(in feet)
1 inch = 2,000 feet

Vegetation

Code	Description
D06	Invasive Perennial Grassland
N11	Open Water
N21	Developed, Open Space - Low Intensity
N22	Developed, Medium - High Intensity
N80	Agriculture
S006	Rocky Mountain Cliff and Canyon
S023	Rocky Mountain Aspen Forest and Woodland
S024	Rocky Mountain Bigtooth Maple Ravine Woodland
S025	Rocky Mountain Subalpine-Montane Limber-Bristlecone Pine Woodland
S028	Rocky Mountain Subalpine Dry-Mesic Spruce-Fir Forest and Woodland
S030	Rocky Mountain Subalpine Mesic Spruce-Fir Forest and Woodland
S031	Rocky Mountain Lodgepole Pine Forest
S032	Rocky Mountain Montane Dry-Mesic Mixed Conifer Forest and Woodland
S034	Rocky Mountain Montane Mesic Mixed Conifer Forest and Woodland
S039	Colorado Plateau Pinyon-Juniper Woodland
S046	Rocky Mountain Gambel Oak-Mixed Montane Shrubland
S050	Inter-Mountain Basins Mountain Mahogany Woodland and Shrubland
S054	Inter-Mountain Basins Big Sagebrush Shrubland
S071	Inter-Mountain Basins Montane Sagebrush Steppe
S078	Inter-Mountain Basins Big Sagebrush Steppe
S083	Rocky Mountain Subalpine Mesic Meadow
S085	Southern Rocky Mountain Montane-Subalpine Grassland
S091	Rocky Mountain Subalpine-Montane Riparian Shrubland
S093	Rocky Mountain Lower Montane Riparian Woodland and Shrubland
S102	Rocky Mountain Alpine-Montane Wet Meadow

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CONSULTING ENGINEERS

Pipeline Options
- Option 1
- Option 2
- Option 3
- Option 4
- Connected Action

Legend
- Streams
- Tunnels
- *Park City Limits*

Client/Project
Park City Municipal Corporation
Judge Tunnel Water Line
Environmental Assessment

Figure No.
5.0

Title
Judge Tunnel Alignment Vegetation Map

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Judge Tunnel Portal
Elevation = 7,650 ft

SR-224
McLeod Creek
Park City
Silver Creek
Drain Tunnel Creek
Water
Treatment
Plant
WTP
US-40

N

Graphic Scale
0 2,000
(in feet)
1 inch = 2,000 feet

Pipeline Options
- Option 1
- Option 2
- Option 3
- Option 4
- Connected Action

Legend
- *Park City Limits*
- *Streams*
- *Tunnels*

Stantec

Bowen Collins & Associates, Inc.
CONSULTING ENGINEERS

Client/Project
Park City Municipal Corporation
Judge Tunnel Water Line
Environemtnal Assessment

Figure No.
6.0

Title
Judge Tunnel Alignment
Soils Map

Table 8 Soil Units Present in the Study Area

118	DROMEDARY-ROCK OUTCROP COMPLEX, 30-70%
123	DUMPS, MINES
126	ECHOCREEK LOAM, 2-10% SLOPES
128	FEWKES GRAVELLY LOAM. 2-8% SLOPES
141	HEINERS-FEWKES-HADES COMPLEX, 30-70% SLOPES
151	LUCKY STAR GRAVELLY LOAM, 30-60% SLOPES
154	MANILLA-ANT FLAT LOAMS, 2-8% SLOPES
157	MANILLA-HENEFER COMPLEX, 8-15% SLOPES
160	PARKCITY-DROMEDARY GRAVELLY LOAMS, 30-70%
178	WANSHIP LOAM, 0-3% SLOPES
179	WANSHIP-KOVICH LOAMS, 0-3% SLOPES
181	YEATES HOLLOW-HENEFER COMPLEX, 15-30%
182	YEATES HOLLOW-HENEFER COMPLEX, 30-60%

The Kovich soil series is listed on the Hydric Soils of the United States list. Echocreek Loam, 2-10% slopes (126), Wanship Loam, 0-3% slopes (178) and Wanship-Kovich loams, 0-3% slopes (179) are listed as hydric soils on the Utah List of Hydric Soils. These soils are typically found in flood plains and stream corridors. All other soils present in the study area are upland soils. Detailed soil unit descriptions are included in Appendix C. Areas of impact to hydric soils are estimated for each of the proposed alignments in Table 9. Hydric soils are located in the Silver Creek stream corridor near the water treatment plant and near the ponds at the base of Deer Valley. Other areas listed as having hydric soils are located in well developed areas. It is unlikely that wetlands are present in those areas.

Table 9 Areas of Impact to Hydric Soils

	Area of Impact (acres)[1]
Alignment	**Hydric Soils**
Option 1: Treasure Hill	2.0
Option 2: Marsac-Deer Valley	5.0
Option 3: Chatham Crossing	3.0
Option 4: US-40 Frontage Rd.	2.8

[1] Areas were determined assuming a 20-foot corridor.

3.5.3 NWI and Delineated Wetlands

The NWI Map exhibits potential wetland areas located along the Silver Creek stream corridor near the water treatment plant and near the ponds at the base of Deer Valley (see Figure 7). The NWI program classified the wetland habitat located within the project area as the following:

- Palustrine Emergent Seasonally Flooded (PEMC)
- Palustrine Aquatic Bed Intermittently Exposed (PABG)

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Judge Tunnel Portal
Elevation = 7,650 ft

SR-224
McLeod Creek
Park City
Silver Creek
Drain Tunnel Creek
US-40
Water Treatment Plant
WTP

Graphic Scale
0 2,000
(in feet)
1 inch = 2,000 feet

Wetland Codes:

PEMC - Palustrine Emergent Seasonally Flooded

PEMF - Palustrine Emergent Semipermanently Flooded

PUSA - Palustrine Uncosolidated Shore Temporarily Flooded

PSS - Palustrine Scrub-Shrub

L2USCh - Lacustrine Littoral Unconsolidated Shore Seasonally Flooded, Diked/Impounded

PAB - Palustrine Aquatic Bed

PABGx - Palustrine Aquatic Bed Intermittently Exposed, Excavated

Pipeline Options

Stantec

Bowen Collins & Associates, Inc.
CONSULTING ENGINEERS

Legend

- Stantec Delineated Wetlands
- NWI Wetlands
- *Park City Limits*
- *Streams*
- *Tunnels*

Client/Project
Park City Municipal Corporation
Judge Tunnel Water Line
Environmental Assessment

Figure No.
7.0

Title
Judge Tunnel Alignment NWI Map

- Palustrine Aquatic Bed Intermittently Exposed Excavated (PABGx)
- Palustrine Aquatic Bed Semipermanently Flooded Excavated (PABFx)
- Palustrine Scrub-Shrub Emergent Seasonally Flooded (PSS/EMC)

A limited area in the vicinity of the water treatment plant was formally delineated for the PCMC Quinn's Junction Water Treatment Plant and Raw Water Line project (see Figure 7). Areas of impact to NWI wetlands and delineated wetlands are summarized in Table 10.

Table 10 Areas of Impact to NWI and Delineated Wetlands

	Area of Impact (acres)[1]
Alignment	**NWI and Delineated Wetlands**
Option 1: Treasure Hill	0
Option 2: Marsac-Deer Valley	0.04
Option 3: Chatham Crossing	0.14
Option 4: US-40 Frontage Rd.	0.3

[1] Areas were determined assuming a 20-foot corridor.

3.5.4 Hydrology

Hydrology on the site consists of surface water, precipitation and snowmelt. Silver Creek and a ditch that is a tributary of McLeod Creek are present within the project area. Open water consists of the ponds located at the base of Deer Valley.

3.5.5 Investigation Results

The results of the wetland, vegetation and soil review indicate that the area along the Silver Creek stream corridor near water treatment plant and the area near the Deer Valley ponds have the greatest potential for the presence of wetlands. The estimated impacts to hydric soils, NWI and delineated wetlands, and hydrophytic vegetation are summarized in Table 11.

Table 11 Summary of Estimated Impacts to Wetland Areas

	Area of Potential Concern (acres)		
Alignment	**NWI and Delineated Wetlands**	**Hydric Soils**	**Hydrophytic Vegetation**
Option 1: Treasure Hill	0	2.0	0
Option 2: Marsac-Deer Valley	0.04	5.0	0.01
Option 3: Chatham Crossing	0.14	3.0	0
Option 4: US-40 Frontage Rd.	0.3	2.8	0.9

As the results indicate, all four alignment alternatives may temporarily impact jurisdictional wetlands (Waters of the U.S.). Option 1 may have potential impacts to wetlands located within ditch corridor that is a tributary to McLeod Creek. Option 2 may have potential impacts to wetlands located within the Silver Creek stream corridor. Option 3 and 4 may have potential impacts to wetlands located within the Silver Creek stream corridor and wetlands located near

the ponds at Deer Valley. This determination is primarily based on the presence of NWI wetlands and delineated wetlands. A formal delineation should be conducted to define the wetland boundaries as necessary for specific alternatives.

3.5.6 Potential Impacts and Recommended Mitigation Measures for Wetlands

3.5.6.1 No Action Alternative

No impacts to wetlands from this alternative.

3.5.6.2 Proposed Pipeline Alignments

3.5.6.2.1 Alignment Option 1 - Treasure Hill (Proposed Alternative)

No wetlands were found along the potential construction corridor of this alignment. The pipeline does cross two creeks which will require a State stream alteration permit. Mitigation for temporary impacts requires restoring impacted areas to pre-construction conditions and the site to be re-vegetated appropriately. All temporary fills must be removed from the site and impacted areas must be restored to pre-construction elevations.

3.5.6.2.2 Alignment Option 2 - Marsac Avenue to Deer Valley Drive

Temporary impacts to potentially jurisdictional wetlands or creek crossings may be anticipated during construction. A wetland delineation and USACE Section 404 Nationwide Permit 12 is necessary for installation of utility lines exceeding 500-feet in jurisdictional wetlands. Mitigation for temporary impacts requires restoring impacted areas to pre-construction conditions and the site to be re-vegetated appropriately. All temporary fills must be removed from the site and impacted areas must be restored to pre-construction elevations. Measures must be implemented to prevent draining of existing wetlands, such as installation of clay trench plugs, bentonite or other suitable material in the trench. Construction methods selected for utility installation may minimize impacts to jurisdictional wetlands.3.5.6.2.3 Alignment Option 3 – Chatham Crossing

Potential impacts and mitigation measures for wetlands are provided in Section 3.5.6.2.2 above.

3.5.6.2.4 Alignment Option 4 – US-40 Frontage Road

Potential impacts and mitigation measures for wetlands are provided in Section 3.5.6.2.2 above.

3.6 WILDLIFE

A review of the potential presence of listed Threatened and Endangered Wildlife Species (T & E Species) and their habitat types was conducted by Stantec for the Park City Municipal Corporation's proposed water line improvements in Summit County. Candidate species were also included in the review. This was to determine potential impact of proposed impacts from the stream restoration process for those T & E Species listed including: Yellow-billed Cuckoo,

Black-footed Ferret, Brown (Grizzly) Bears and Canada Lynx. In addition to T & E Species, State Sensitive Wildlife Species were also reviewed for Summit County. These species are discussed below. Plant species composition and density determine wildlife use but fragmentation of habitat is also of deep concern to wildlife managers. All of the reviewed species are affected by fragmentation but bald eagles and Canada lynx particularly prefer areas away from human activity.

An additional general wildlife assessment was completed during a walking survey of the updated alignment by Bowen Collins & Associates in June 2012.

3.6.1 Endangered and Threatened Wildlife Species

The Endangered Species Act (ESA) was enacted in 1973 to address the decline of fish, wildlife, and plant species in the United States and throughout the world. The purpose of the ESA is to conserve "the ecosystems upon which endangered and threatened species depend' and to conserve and recover listed species (ESA §, 16 U.S.C. 1531).

Under the ESA species may be listed as either "endangered" or "threatened." The ESA defines an endangered species generally as any species that is in danger odor extinction through all or a significant portion of its range. ESA § 3(6). A threatened species is one that is likely to become an endangered species within the foreseeable future throughout all or a significant part of its range. ESA § 3(20). All species of plants and animals, except pest insects are eligible for listing as endangered or threatened.

The ESA also affords protection to "critical habitat" for threatened and endangered species. The definition of "critical habitat" includes specific areas within the geographical area occupied by the species at the time it is listed, on which are found physical or biological features essential to the conservation of the species and which may require special management considerations or protection. ESA § 3(5)(A and B). Except when designated by the Secretary of the Interior, critical habitat does not include the entire geographical area that can be occupied by the threatened or endangered species. ESA § 3(5)(C).

Yellow-billed Cuckoo is listed as a Candidate for Endangered or Threatened status. This bird is not known to exist in Summit County according to the Utah Natural Heritage Program in their 2003 progress report. It requires low to mid-elevation riparian habitat with dense shrubby understory vegetation with an overstory forest. While dense Willow/Cottonwood habitats are preferred, the stream corridors on this site have limited willows and few overstory trees. Since the defined project area composes mostly Gambel Oak and Big Sagebrush, it is not expected that this species will be affected by the proposed work. Implementation of the proposed action would have no effect to the yellow-billed cuckoo.

Black-footed ferret is listed as Extirpated in Summit County by the U.S. Fish and Wildlife (USFWS) and the Utah Division of Wildlife. The species has been re-introduced in regions outside the study area but the populations are classified as "nonessential-experimental". Because no populations have been reintroduced to this area, it is not expected that this species

will be affected by the proposed work. Implementation of the proposed action will have no effect on the black-footed ferret.

Brown (Grizzly) bears have used this area as part of their historic range but are also unknown in the area in the last several decades. The USFWS have listed the species as Extirpated (considered no longer to exist in Utah). Implementation of the proposed action will have no effect on the brown (grizzly) bear.

Canada lynx are unknown in the project area. Canada lynx sightings are exceedingly rare and the latest known lynx in Utah was identified by the U.S. Forest Service in the Manti-La Sal National Forest in 2002. This project is unlikely to affect this species. Implementation of the proposed action will have no effect on the Canada lynx.

3.6.2 State Sensitive Wildlife Species

Bald eagle habitat is considered limited on the site due to requirements for a mix of forested and open water areas. No breeding pairs of bald eagles have been known to exist in Summit County since 1976. Bald Eagles are known to use areas of Summit County as wintering areas but this would not have any significant overlap with optimum construction period for the proposed activities for the proposed pipeline. On June 28, 2007, it was announced that the Bald Eagle was to be removed from the Threatened and Endangered Species List. However, they are still under the scope of Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act that prohibits the disturbance of Bald Eagles or their nests. This project is unlikely to affect this species.

Bluehead Suckers are listed for Summit County and are present in the Weber River basin. The Bluehead Sucker has lost 55% of their original range due to damming and alterations of flow, sediment transport and water temperature. A known population is in the Weber River but outside of the project area. Bluehead Suckers like fast-flowing waters in high gradient streams. Since base flows in Silver Creek have been diverted to irrigation ditches above the proposed water treatment plant, this project does not contain suitable habitat. This species would not be affected by the project.

Bobolink is a neotropical bird that flies from their wintering grounds in South American to their North American breeding grounds arriving in mid-May in Utah. They nest in wet meadow and irrigated pasture areas and are particularly susceptible to early spring mowing. Very few areas in the proposed alignment match this description. As noted above, most of the project site is covered with Big Sagebrush and by developed areas. The little habitat in the proposed alignments is Agriculture. The only significant portions of the four alterative alignments with Agriculture are below the water treatment plant in Option 4 and a much smaller area at the upper end of the proposed water line where Options 1 and 4 join together.

The Bobolink rarely nests in grasses; nests are more typically associated with larger forbs and sedges. Known populations of this species are few compared to historical records. The nearest known breeding areas to the study area are in Kamas, Mountain Green, Morgan and Heber. No known breeding populations are within the study area, however the Utah National Heritage

Program has stated that the Bobolink have recent records of occurrence within the vicinity of the project area. Based on this information, the proposed work may affect this species. If breeding bobolinks are nesting in the study area, impacts to the species could be minimized or avoided by coordinating with wildlife agencies and avoiding nesting sites by ½ mile. With proper considerations, this project is not likely to affect this species.

The **Bonneville Cutthroat Trout** is a subspecies of the cutthroat trout native to the Bonneville Basin. Pure strains of this species are rare due to hybridization with non-native trout species, predation by and competition with stocked non-native fish and habitat loss/alteration. Increased sedimentation, increased water temperature and loss of pool habitat have contributed to the decline in this species. Bonneville Cutthroat Trout can be found from low elevation grassland streams to high elevation mountain streams. It does require a functional riparian zone with such components as structure, shade, cover and bank stability. As such, this species is not likely to be found in the areas upstream from Quinn's Junction because base flows have been diverted from Silver Creek for irrigation. This species is increasing due to captive propagation and restocking efforts. The Utah National Heritage Program has stated that the Bonneville Cutthroat Trout have recent records of occurrence within the vicinity the project area. With mitigation measures, this project will have minimal impacts to streams and should have no affect on this species.

Colorado River Cutthroat Trout are a native cutthroat trout species in the Colorado River drainage. This species is in the eastern portion of Summit County and is not found in the study area. This project will not affect this species.

The **Columbia Spotted Frog** prefers isolated areas with a perennial water source such as a spring or a seep. This species breeds very early in the spring and the egg hatch can occur between 3 and 21 days later, dependent on temperature. Breeding sites will have little or no current, deep silty substrate and are surrounded by dense vegetation. Habitat fragmentation and reduction are the main reasons for the decline in this species. Water reductions, pollution, livestock use and the introduction of non-native species are also considered to be factors in their decline. According to the Conservation Agreement and Strategy for the Columbia Spotted Frog signed by federal and state agencies in 2006, the upper Weber River basin has only one population. This population is a reintroduced population in the Swaner Preserve. This project will not affect this species.

Deseret Mountain Snail has one known population in Summit County but is not in the study area. Thirteen populations exist in the state and most are associated with leaf litter from Mountain Maple, Scrub Oak and Balsam Root. They are also often found in close association with limestone outcrops. The bulk of the proposed habitat in all of the alignment alternatives is through developed areas or through Sagebrush Steppe. It is not likely that this species will be affected by the project.

Ferruginous Hawk is typically a species found in pinyon-juniper and sagebrush steppe habitats. The area surrounding the proposed pipeline alignment has the potential for habitat for both nesting and wintering. Two nest sites in Summit County have been recorded in the

southwest corner of Summit County, therefore, coordination with State and Federal Wildlife agencies would be needed to determine if these would be impacted by the project. Prior coordination with the Utah National Heritage Program has stated that the Ferruginous Hawk have recent records of occurrence within the vicinity of the water treatment plant and the previous work conducted on the project. Based on this information, the proposed work may affect this species. Disturbances could be minimized by avoiding known nests by a ½ mile distance during nesting season. With proper considerations, this project can avoid adverse affects to this species.

Greater Sage-Grouse prefers areas dominated by Sagebrush (*Artemisia* spp.), in particular, Big Sagebrush (*Artemisia tridentata*) for breeding habitat or leks. Wet meadow areas can provide some additional habitat needs seasonally. The prime reason for low population of the species is related to fragmentation or reduction in habitat. Coordination with the Utah National Heritage Program in March 2010 has determined that no known breeding locations are within two miles of the proposed Judge Tunnel alignment. Based on this information, the proposed work is not likely to affect this species. State and Federal Wildlife agencies would be need to be notified if sage-grouse breeding areas are observed in the area. Such activity is unlikely due to the prior development along the proposed alignment.

Leatherside Chub is a small minnow native to streams and rivers in the southeast portion of the Bonneville Basin. Its decline is due to habitat alterations, predation by non-native game fish. This species also hybridizes with the introduced Red-Side Shiner. However, it is considered extirpated in streams and wetlands on the east side of the Salt Lake Valley. As such, this species is not expected to be present in the study area. This species is not likely to be affected by this project.

Lewis's Woodpeckers nest in the cavities of tall trees, sometimes in dead or fire damaged trees. They prefer Ponderosa Pine, Cottonwood and Sycamore trees. Large open park-like Ponderosa Pine forests are their preferred habitat for nesting. They also like Cottonwood trees in riparian areas. They prefer wooded areas with shrubs and tall grasses capable of supporting a substantial insect prey population. Oak woodlands are their preferred wintering habitat. Possible reasons for the decline of this species include competition with European Starlings for nesting sites, pesticide use and loss of riparian habitat. No known breeding pairs have been observed in Summit County since 1983. The study area has limited use for nesting areas but is more likely to be used for winter habitat. It is not expected that this project will affect this species.

Long-billed Curlews are a migrating shorebird species that breeds in arid grasslands, grassy shorelines and along the margins of agricultural areas. They require short grasses, bare ground, shade and abundant invertebrate prey. They migrate through Summit County but are not known to breed in the area. It is not expected that this project will affect this species.

The **Northern Goshawk** prefers wooded riparian areas and mature mountain forests. It is a native of North America but is not considered common in Utah. Nests are constructed in mature forests. While mature forests are preferred for hunting, various habitat types may be used for

hunting. The margins of riparian corridors can be utilized as prey enters and leaves the cover of trees and shrubs. It is not expected that this project will affect this species due to limited nature of disturbance relative to the overall hunting range of an individual Northern Goshawk.

Smooth Greensnakes prefer wet meadow, riparian wetlands and other moist areas where its solid green coloration provides good camouflage. This species is small, secretive and well camouflaged, so population numbers have not been estimated. The smooth greensnake eats mainly terrestrial insects. Degradation of mountain riparian zones from livestock use is a potential threat to this species. Reduction or alteration of understory vegetation is of particular concern for this species. According to the DWR's "*Vertebrate Information: A Progress Report*", this species is unknown in the project area, but they have some areas of "Substantial Value Habitat" within the study area, according to the Utah Conservation Data Center website. However, that habitat classification does not state that the snake is found in those areas. Due to the limited base flows in the upper Silver Creek, it is unlikely that this project will affect this species as it has not been reported in this area.

The **Three-Toed Woodpecker** prefers scaly barked conifers such as Lodgepole Pine and Engelmann Spruce. Spruce-fir forests are particularly used. This species is considered common in the Uinta Mountains, but uncommon in the rest of the state. Known breeding populations in Summit County are outside the proposed study area. It is not expected that this project will affect this species.

Western Pearlshell is currently considered to be extirpated from all historic populations in Utah. This species has not been reported since 1942. This species may initially have been over-estimated due to glochidia (larval mollusk) shed from imported trout used for stocking streams. It is not expected that this project will affect this species.

The **Western Toad** prefers riparian areas within montane forested habitats but has not been found in the study area since 1983. This species prefers slow-moving areas of streams, such as side channels, beaver ponds, backwater areas and small pools. The Western Toad can cross miles of upland habitat between breeding periods. Although, this species was once present in the area, it is not known to exist in the area at present. Dewatering of Silver Creek for irrigation purposes have reduced likelihood of the species being present in the project area. This project is not expected to affect this species.

3.6.3 Summary

The following T & E Species and State Sensitive Wildlife Species have had recent records of occurrences within the study area: Bonneville Cutthroat Trout and Bobolink (see Table 12). Ferruginous Hawk and Greater Sage-Grouse are known to be in the area and have the potential for nesting, breeding and wintering site near the proposed pipeline alignments.

The Bonneville Cutthroat Trout has known populations downstream and the study area is in their historic range. Best Management Practices should be observed to limit potential damage to the downstream populations by increased sedimentation or increases in stream temperature.

This area has a potential for possible Ferruginous Hawk nesting sites, particularly on rock outcrops and large trees that may be near the proposed alignments. Coordination with Utah Division of Wildlife Resources is recommended to identify known breeding areas prior to construction. A minimum radius of ½ mile avoidance should be the priority around these populations during the breeding season.

The other bird species, Bobolink, may use areas in or around the proposed pipeline corridor. Coordination with Utah Division of Wildlife Resources is recommended to identify known breeding areas prior to construction. A minimum radius of ½ mile avoidance should be the priority around these populations during the breeding season.

Table 12 Summit County Threatened and Endangered Species & State Sensitive Species

Common Name	Scientific Name	Status
Threatened and Endangered Species		
Yellow-billed Cuckoo	Coccyzus americanus	C
Black-footed Ferret	Mustela nigripes	E - Extirpated
Brown (Grizzly) Bear	Ursos arctos	T - Extirpated
Canada Lynx	Lynx canadensis	T
State Sensitive Species		
Bald Eagle*	Haliaeetus leucocephalus*	CS*
Bluehead Sucker	Catostomus discobolus	CS
Boblink	Dolichonyx oryzivorus	SPC
Bonneville Cutthroat Trout	Oncorhynchus clarkii utah	CS
Colorado River Cutthroat Trout	Oncorhynchus clarkii pleuriticus	CS
Columbia Spotted Frog	Rana luteiventris	CS
Deseret Mountainsnail	Oreohelix peripherica	SPC
Ferruginous Hawk	Buteo regalis	SPC
Greater Sage-Grouse	Centrocercus urophasianus	SPC
Leatherside Chub	Gila copei	SPC
Lewis's Woodpecker	Melanerpes lewis	SPC
Long-billed Curlew	Numenius americanus	SPC
Northern Goshawk	Accipiter gentilis	CS
Smooth Greensnake	Opheodrys vernalis	SPC
Three-toed Woodpecker	Picoides tridactlus	SPC
Western Pearlshell	Margaritifera falcata	SPC
Western Toad	Bufo boreas	SPC

E – Endangered
T – Threatened
C – Candidate species for listing as Threatened or Endangered
Extirpated – A Threatened, Endangered or Candidate Species that is considered by the US Fish and Wildlife to no longer occur in Utah.
CS – Species receiving special management under a Conservation Agreement to preclude the need for Federal Listing as a Threatened or Endangered Species
SPC – Wildlife Species of Concern
* Removed from the Federal List of Endangered and Threatened Wildlife in July of 2007. This will not affect the federal protection provided under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. Remains a Conservation Species with an existing conservation plan to protect the birds and their habitat.

3.6.4 Potential Impacts and Recommended Mitigation Measures for Wildlife

3.6.4.1 No Action Alternative

No impacts to wildlife under this alternative.

3.6.4.2 Proposed Pipeline Alignments

3.6.4.2.1 Alignment Option 1 - Treasure Hill (Proposed Alternative)

The lower portion of this alignment option is in developed areas and should have no impacts on any of the three potential species (Bonneville Cutthroat Trout, Bobolink and Ferruginous Hawk) in any of the areas below SR-224. Care should be taken to minimize soil disturbances into the drainages to avoid impacts to Bonneville Cutthroat Trout in the lower watershed.

3.6.4.2.2 Alignment Option 2 - Marsac Avenue to Deer Valley Drive

Similar to Alignment Option 1, this alignment is almost entirely within developed areas. None of the three sensitive species should be impacted by this alignment. Care should be taken to minimize soil disturbances into the drainages to avoid impacts to Bonneville Cutthroat Trout in the lower watershed.

3.6.4.2.3 Alignment Option 3 - Chatham Crossing

Alignment Option 3 crosses significant areas of Sagebrush Steppe habitat and a portion of that habitat is on Bureau of Land Management property. It is unlikely that this alignment contains significant presence of any of the three sensitive species due to the development surrounding all sides of the proposed alignment.

3.6.4.2.4 Alignment Option 4 - US-40 Frontage Road

Alignment Option 4 also crosses significant areas of Sagebrush Steppe habitat but only on private ground and much closer to developed areas such as US-40 and low density residential areas. It has a higher likelihood for Bobolink than the prior alignment options due to the proximity of a large agricultural area next to wetlands below the proposed water treatment plant. Care should be taken to minimize soil disturbances into the drainages to avoid impacts to Bonneville Cutthroat Trout in the lower watershed, especially since this alignment option is closest to open water areas below the proposed treatment plant. It is unlikely that this alignment contains significant presence of the Ferruginous Hawk due to the highway and low density development fragmenting the potential habitat

3.7 NOXIOUS AND INVASIVE WEED CONTROL

Noxious weeds are non-native plants that are highly destructive, competitive and difficult to control or eliminate (King County website, accessed Sept. 8, 2009). Construction activities have the potential to accelerate the spread of noxious weeds through direct dispersion of seeds and roots in the disturbed soils, or indirect dispersion of seeds and roots from construction vehicles

moving through the construction or staging areas (EPA, 2004). For activities with noxious weeds in the construction area, best management practices should be implemented to minimize disturbance to the extent possible.

3.7.1 Potential Impacts and Recommended Mitigation Measures for Noxious Weed Control

Control of noxious and invasive weeds is important to maintaining native vegetation. These weeds tend to overtake native species, grow aggressively, which results in reduced diversity and impacts wildlife habitat.

3.7.1.1 No Action Alternative

No impacts to vegetation under this alternative. No mitigation necessary.

3.7.1.2 Proposed Pipeline Alignments

3.7.1.2.1 Alignment Option 1 - Treasure Hill (Proposed Alternative)

Mitigation measures for noxious and invasive weed control include the following:

1. Identification of noxious weed infestations in any equipment staging areas, construction areas, and access roads;
2. Ensure vehicles and equipment arrive on the construction site weed-free, and depart weed-free;
3. In areas where noxious weeds have been identified, stockpile soil and vegetation adjacent to the area from which they were stripped to eliminate seed or root transport;
4. In areas designated from reclamation, ensure that fertilizer is not applied;
5. Ensure that straw or hay bales used for stormwater BMPs are certified as weed-free;
6. Re-vegetate utilizing the seed mixture included in the Project Specifications.

3.7.1.2.2 Alignment Option 2 - Marsac Avenue to Deer Valley Drive

Mitigation measures for noxious and invasive weed control provided in Section 3.7.1.2.1 above.

3.7.1.2.3 Alignment Option 3 - Chatham Crossing

Mitigation measures for noxious and invasive weed control provided in Section 3.7.1.2.1 above.

3.7.1.2.4 Alignment Option 4 - US-40 Frontage Road

Mitigation measures for noxious and invasive weed control provided in Section 3.7.1.2.1 above.

3.8 AIR QUALITY

Air quality conditions in Utah are monitored and regulated by the Utah Division of Air Quality based on the Federal National Ambient Air Quality standards. Currently, there is a particulate

monitoring station maintained by the Summit County Health Department. A report was completed in May 2010 that surveyed the air for 105 days, from December 23, 2009 through April 12, 2010. The results indicated that the levels were generally low with the exception of two dust storm days. According to the Division of Air Quality, Summit County is considered to be in attainment for air criteria pollutants.

The Division of Air Quality regulates fugitive dust from construction sites, requiring compliance with rules for sites disturbing greater than one-quarter of an acre. Utah Administrative Code R307-205-5 requires steps be taken to minimize fugitive dust from construction activities disturbing more than one-quarter of an acre (R307-205-5 is provided in Appendix D). Sensitive receptors include those individuals working at the site or motorists that could be affected by changes in air quality due to emissions from the construction activity. Due to the nature of the construction activity, no significant effect to air quality is anticipated.

3.8.1 Potential Impacts and Recommended Mitigation Measures for Air Quality

3.8.1.1 No Action Alternative

No impacts to air quantity under this alternative; mitigation not necessary.

3.8.1.2 Proposed Pipeline Alignments

3.8.1.2.1 Alignment Option 1 - Treasure Hill (Proposed Alternative)

In order to minimize fugitive dust due to the installation of this pipeline, mitigation measures must be implemented in compliance with the Utah Division of Air Quality permitting requirements. Such control may include watering and chemical stabilization of potential fugitive dust sources or other equivalent methods or techniques approved by the State's executive secretary.

3.8.1.2.2 Alignment Option 2 - Marsac Avenue to Deer Valley Drive

Mitigation measures identified in Section 3.8.1.2.1 above also apply to this alignment.

3.8.1.2.3 Alignment Option 3 - Chatham Crossing

Mitigation measures identified in Section 3.8.1.2.1 above also apply to this alignment.

3.8.1.2.4 Alignment Option 4 - US-40 Frontage Road

Mitigation measures identified in Section 3.8.1.2.1 above also apply to this alignment.

3.9 VISUAL RESOURCES

Landuse in the Park City area has varied over time from mining and agriculture, to residential development and winter sports. This is typical of mountainous areas in the west. The visual resources of this area include open spaces, hills and mountains. Ski areas, Olympic facilities and urban growth are also part of the viewshed.

Park City has adopted a General Plan that includes the following goal relating to aesthetic aspects of the area:

> *Park City should establish an open space buffer surrounding the community to define the natural and visual "basin" of the community's location preserving sensitive lands and important vistas. The pattern, location, and appearance of development should not intrude on the visual quality of Park City or surrounding areas.*

This Plan also includes action items for developing areas as follows:

- *Promote the use of such building materials as wood siding, rock accents, earth tones, and metal roofs that have historic precedents in a mountain community context.*
- *Minimize architectural styles and signage that are clearly not in keeping with the mountain resort character of the community.*
- *Maintain entry corridor aesthetics including open vistas and natural stream corridors.*

3.9.1 Potential Impacts and Recommended Mitigation Measures for Visual Resources

3.9.1.1 No Action Alternative

No changes to visual resources would occur under this alternative.

3.9.1.2 Proposed Pipeline Alignments

3.9.1.2.1 Alignment Option 1 - Treasure Hill (Proposed Alternative)

Impacts to visual resources will be temporary in nature, occurring during the construction phase of this project. With proper revegetation as addressed in Section 3.7, long-term impacts are not anticipated. No mitigation necessary.

3.9.1.2.2 Alignment Option 2 - Marsac Avenue to Deer Valley Drive

Refer to Section 3.9.1.2.1 above.

3.9.1.2.3 Alignment Option 3 – Chatham Crossing

Refer to Section 3.9.1.2.1 above.

3.7.1.2.4 Alignment Option 4 – US-40 Frontage Road

Refer to Section 3.9.1.2.1 above.

3.10 CULTURAL RESOURCES

A Class III Cultural Resource Inventory was conducted for the proposed project area (Appendix E). This consisted of a review of the existing data pertaining to known cultural resource site locations in the area as well as a site reconnaissance.

See Appendix E for additional historical or cultural sites as they relate to the preferred alignment.

3.11 TRAFFIC

Traffic records in the area are maintained by the Utah Department of Transportation. The Annual Average Daily Traffic counts for roads in Park City are:

- US-40 is approximately 24,000
- SR-248 is approximately 18,000
- Marsac Ave. is approximately 3,000

3.11.1 Potential Impacts and Recommended Mitigation Measures for Traffic

3.11.1.1 No Action Alternative

No impact to traffic volumes with this alternative.

3.11.1.2 Proposed Pipeline Alignments

3.11.1.2.1 Alignment Option 1 - Treasure Hill (Proposed Alternative)

Minimal increase in traffic during pipeline construction is anticipated. No long-term impact anticipated. Compliance with Park City Design Standards, Construction Specifications and Standard Drawings (500.7; see Appendix F) conditions is required. These conditions are as follows:

- Construction activities will be conducted so as to minimize obstruction of vehicular or pedestrian traffic and to prevent damage to completed work. In this regard, PCMC must be continuously informed as to the location(s) of this operation.
- No City street or roads shall be closed to vehicular traffic without the prior permission of the PCMC and not until after the affected emergency response authorities have been notified. Street closure authorization must be obtained from PCMC.
- In order that the effect to both the flow of traffic and damage to the new work is minimized, use of approved barricades, lights, flag men and other traffic control devices approved by the City Engineer, specified on the drawings or specifications or as may be required by law is required. All barricades needed overnight shall have flashing amber lights.

- Submittal of a traffic control plan to PCMC for approval is required prior to the start of work.

3.11.1.2.2 Alignment Option 2 - Marsac Avenue to Deer Valley Drive

Minimal increase in traffic during pipeline construction is anticipated. No long-term impact. See mitigation measures under Section 3.11.1.2.1.

3.11.1.2.3 Alignment Option 3 – Chatham Crossing

Minimal increase in traffic during pipeline construction is anticipated. No long-term impact. See mitigation measures under Section 3.11.1.2.1.

3.11.1.2.4 Alignment Option 4 – UT-40 Frontage Road

Minimal increase in traffic during pipeline construction is anticipated. No long-term impact. See mitigation measures under Section 3.11.1.2.1.

3.12 NOISE

Given the relatively urban nature of the study area, and the growth in population that the area is experiencing, the primary sources of noise in this area are associated with motor vehicles and human activities. The sensitive receptors are primarily residents, visitors, and wildlife.

Park City Municipal Code Title 6 – Health, Nuisance Abatement, Noise regulates noise disturbances with the intent to:

- Reduce the making and creation of excessive, unnecessary, or unusually loud noises,
- Prevent the making, creation, or maintenance of such excessive, unnecessary, or unusually prolonged, unusual, or unreasonable in their time, place, or use that affect and are a detriment to public health, comfort, convenience, safety, or welfare of the residents,
- Secure and promote the public health, comfort, convenience, safety, welfare, and the peace and quiet of the residents.

Park City Chapter 3 (G) of Title 6 includes a noise prohibition for construction work in particular areas in Park City, including single-family homes. In addition, this section stipulates hours that construction activities are allowed (see Appendix G).

3.12.1 Potential Impacts and Recommended Mitigation Measures for Noise

3.12.1.1 No Action Alternative

No impacts to noise levels from this alternative.

3.12.1.2 Proposed Pipeline Alignments

3.12.1.2.1 Alignment Option 1 - Treasure Hill (Proposed Alternative)

Minimal increase in noise during pipeline construction is anticipated. No long-term impact. Compliance with PCMC Municipal Code Title 6 and Park City Construction Management Plan conditions is required. These conditions are as follows:

- The hours of operation are 7AM to 9PM, Monday thru Saturday, and 9AM to 6PM on Sunday.
- Any noise above 65 decibels violates the noise ordinance, as well as any excessive or unusually loud noise that is plainly audible beyond the property line or outside the hours of operation.

3.12.1.2.2 Alignment Option 2 - Marsac Avenue to Deer Valley Road

Compliance with PCMC Code Title 6 will serve to minimize any impacts. Refer to Section 3.12.1.2.1 for specific conditions.

3.12.1.2.3 Alignment Option 3 – Chatham Crossing

Compliance with PCMC Code Title 6 will serve to minimize any impacts. Refer to Section 3.12.1.2.1 for specific conditions.

3.12.1.2.4 Alignment Option 4 – US-40 Frontage Road

Compliance with PCMC Code Title 6 will serve to minimize any impacts. Refer to Section 3.12.1.2.1 for specific conditions.

3.13 ENVIRONMENTAL JUSTICE

As directed by Executive Order 12898, all federal actions, programs, and policies shall identify and prevent and/or mitigate, to the greatest extent practicable, disproportionately high and adverse human health and environmental effects on minorities and low-income populations. For this project, a review of the locations of affordable housing units was conducted. As shown on Figure 8, the pipeline alignments will not affect these housing locations as they remain on city roads through the more dense areas of affordable housing. Mitigation measures are not necessary.

3.14 PRIME FARMLAND

Prime Farmland is defined by the U.S. Department of Agriculture as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses (USDA website). The loss of prime farmland to other uses puts pressure on less productive lands, which may impair the productive capacity of American agriculture.

States may also designate Farmland of Statewide Importance, which is defined as land with soils that nearly meet the requirements for prime farmland, and that economically produce high yield of crops when treated and managed according to acceptable farming methods.

Figure 9 provides the location of Prime Farmlands and Farmland of Statewide Importance in the project area.

3.14.1 Potential Impacts and Recommended Mitigation Measures for Prime Farmland

3.14.1.1 No Action Alternative

No impacts to prime farmland from this alternative.

3.14.1.2 Proposed Pipeline Alignments

3.14.1.2.1 Alignment Option 1 - Treasure Hill (Proposed Alternative)

This option crosses land that is classified as “Prime farmland if irrigated” and Farmland of Statewide Importance”. However, given the current land use (urban and ski resort) and slope of this land, it does not meet the appropriate definition.

3.14.1.2.2 Alignment Option 2 - Marsac Avenue to Deer Valley Road

Refer to Section 3.14.1.2.1 above.

3.14.1.2.3 Alignment Option 3 – Chatham Crossing

Refer to Section 3.14.1.2.1 above.

3.14.1.2.4 Alignment Option 4 – US-40 Frontage Road

Refer to Section 3.14.1.2.1 above.

3.15 TRAILS

Park City is known for their well-kept and always growing recreational trails. It is important to maintain these trails during construction and to provide detours and appropriate signage when a trail will be closed. The construction documents shall include trails that may be temporarily closed during construction and direct the contractor to coordinate directly with PCMC’s trails coordinator, sustainability department, and Mountain Trails Foundation prior to and during construction.

P:\Park City\Environmental\Judge Tunnel EA\Projects\fig8_affordable_housing.mxd

N

Graphic Scale
0 2,000
(in feet)
1 inch = 2,000 feet

Judge Tunnel Portal
Elevation = 7,650 ft

SR-224
McLeod Creek
Park City
Silver Creek
Drain Tunnel Creek
WTP
Water Treatment Plant
US-40

Pipeline Options
- Option 1
- Option 2
- Option 3
- Option 4
- Connected Action

Affordable Housing Location

Legend
- *Park City Limits*
- *Streams*
- *Tunnels*

Stantec

Bowen Collins & Associates, Inc.
CONSULTING ENGINEERS

Client/Project
Park City Municipal Corporation
Judge Tunnel Water Line
Environemtnal Assessment

Figure No.
8.0

Title
Judge Tunnel Alignment
Affordable Housing Map

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N

Graphic Scale
0 2,000
(in feet)
1 inch = 2,000 feet

Judge Tunnel Portal
Elevation = 7,650 ft

SR-224
McLeod Creek
Park City
Silver Creek
Drain Tunnel Creek
Water Treatment Plant
WTP
US-40

154
157
126
178
128
179

Prime Farm Lands			
	Symbol	Name	Classification
	126	Echocreek loam, 2 to 10 percent slopes	Prime farmland if irrigated
	128	Fewkes gravelly loam, 2 to 8 percent	Farmland of statewide importance
	154	Manila-Ant Flat loams, 2 to 8 percent	Prime farmland if irrigated
	157	Manila-Henefer complex, 8 to 10 percent	Farmland of statewide importance
	178	Wanship loam, 0 to 3 percent	Farmland of statewide importance
	179	Wanship-Kovich loams, 0 to 3 percent	Farmland of statewide importance

Pipeline Options
- Option 1
- *Option 2*
- *Option 3*
- *Option 4*
- *Connected Action*

Legend
- *Park City Limits*
- *Streams*
- *Tunnels*

Stantec

Bowen Collins & Associates, Inc.
CONSULTING ENGINEERS

Client/Project
Park City Municipal Corporation
Judge Tunnel Water Line
Environemtnal Assessment

Figure No.
9.0

Title
Judge Tunnel Alignment
Prime Farm Lands

3.16 CONNECTED ACTIONS

A connected action to the proposed action is the installation of a water pipeline from Wyatt Earp Way to the Quinn's Water Treatment Plant. This connected action project was funded by Park City Municipal Corporation, and therefore was separate from the proposed project addressed in this EA. This pipeline segment is approximately 5,500 feet in length, and will connect the Judge Waterline from Wyatt Earp Way along the Rail Trail to Quinn's Junction Water Treatment Plant. This project was completed in winter 2010.

3.17 INDIRECT EFFECTS

Indirect effects are caused by the actions that are later in time or farther removed in distance, but are still reasonably foreseeable (CEQ 1508.8). With the implementation of the mitigating measures described herein, and compliance with the appropriate regulations and Municipal Codes, the potential for indirect effects would be minimized.

Community Growth Impacts – While there is a potential for this expanded source to contribute to continued population growth in Park City, mitigating measures include Park City's General Plan which encourages water efficiency strategies by recommending the development of responsible water conservation standards and requirements. In addition, Park City implements a water conservation plan to reduce water usage (see section below). Furthermore, use of this source could potentially offset the need to develop future water sources.

In accordance with State of Utah R309-510, Minimum Sizing Requirements, water system supply requirements are dictated by two separate conditions: peak day demand (PDD) and average yearly demand. PDD is the anticipated water demand on the day of highest water consumption. Average yearly demand is defined as one year's supply of water. A water system is required to legally and physically meet water demands under both conditions.

The proposed action in this EA will increase the overall supply available to meet the average yearly demand. However, the peak flows from Judge Tunnel are typically in late May and early June. PCMC PDD occurs historically in mid-July. During peak flows when the Judge Tunnel water is turbid, it cannot be used in PCMC drinking water system. The timing of Judge Tunnel peak flows and PCMC PDD do not coincide.

Additional water captured from Judge Tunnel as a result of the proposed action would increase the reliability of Judge Tunnel as a source. It would not, however, increase PCMC ability to meet PDD, because PCMC currently uses Judge Tunnel as a source to meet PDD. Thus, the proposed action in this EA will not increase PCMC source capacity as defined in State of Utah R309-510. Consequently, the proposed action is not anticipated to facilitate additional population growth in and of itself, but could contribute to population growth in conjunction with future source development.

Wetlands Along the Rail Trail –In section 1.3, Table 1 and Figure 1, explain that the water released from waterworks at Judge Tunnel contributes an average of 21% of flow to Silver Creek. This flow is unreliable and has varied greatly from one year to the next. A technical

memo was prepared to address the possible effects of reduced flows in Silver Creek as a result of eliminating occasional Judge Tunnel overflows (Appendix N).

Water Conservation Planning – Park City recently completed a Water Conservation Plan (Park City, 2009) that was adopted by PCMC as Resolution No. 24-09 on July 30, 2009 (see Appendix H). Through the use of growth projections and current water usage, Park City projected water usage through 2050, identifying water usage at current rates, and water usage with conservation; Table 13 presents these figures. Park City has adopted Utah's conservation goal of a 25 percent reduction in per connection use by 2050, with half of this amount (12.5 percent) achieved in the first 20 years and the other half between 2020 and 2050.

Table 13 Park City Water Usage

Year	Based on Historic Use (acre-ft)	With Conservation (acre-ft)
2000	5,468	5,468
2010	7,718	7,235
2020	8,894	7,782
2030	9,695	8,079
2040	9,908	7,844
2050	10,121	7,590

This conservation plan has established the following goals:

- State of Utah goal of 25% water use reduction by 2050
- Ensure water fund has sufficient financial resources to cover cost of ongoing operations and maintenance, required improvements, capital renewal programs and economic contingencies
- Mitigate summer and winter peak day water use
- Inventory water consumption from entire Park City community
- Implement community water consumption reduction program in conjunction with partners

The Park City Water department has worked closely with the Parks and Golf Maintenance departments for the past several years to implement many diverse conservation measures in the community including:

- Efficient irrigation systems in all City owned parks, golf course and plantings
- Universal metering
- Water-wise plantings throughout City owned properties
- Xeriscape demonstration garden
- Every other day watering requirement
- Voluntary third-day watering

- Weekly Park Record water consumption chart
- Park City Water website: water conservation tips and xeriscape planning
- Water bill inserts and direct mailings regarding water conservation issues
- Enforcement of City water ordinance (since mid-1980's) including part-time citation personnel
- Recycle Utah children's education programs/Water Festival
- Local radio public service announcements
- Promotional water conservation give-aways
- Water conservation placards in restaurants and hotels
- Weather-Trak study, using weather controlled irrigation devices
- Conservation Rate Structure
- Ordinance for water use during periods of drought
- FTR position for a Water Resource Analyst to perform the duties of a water conservation manager established July 1, 2008

The conservation program adopted in 2008 and 2009 included the implementation of the following measures:

- Public education
- Enact conservation ordinance
- Customer outdoor water audits
- Enforcement
- Incorporation of Johnson Controls conservation measures
- Fixed base auto-water meter readings system installation
- System water audits
- Water budgeting rate structure
- Meter testing, repair and replacement program
- "Smart" irrigation technology
- Large landscape conservation programs

Park City has developed this plan to encourage water conservation, thereby reducing water usage in the area. Active water conservation may serve to negate or postpone future water delivery projects.

3.18 CUMULATIVE EFFECTS

Cumulative effects are an aggregate of many direct and indirect effects, and include past, present actions, or actions that can reasonably be expected to occur. The potential for direct

adverse effects to the environmental resources resulting from the alternatives is discussed in the previous sections.

Cumulative effects for this project may include maintenance and repair work on the pipeline. Any impacts from this work would likely be temporary in nature, and not likely to have long-term impacts.

3.19 BENEFICIAL EFFECTS

This project will allow PCMC to utilize all of the flow from Judge Tunnel in their drinking water and raw water systems. The drinking water quality will be able to consistently comply with the Code of Federal Regulation (CFR), Title 40, Ch. I, Part 141, National Primary Drinking Water Standards by blending with other water sources to reduce antimony concentrations. Additional water quality benefits are likely to be realized for Judge Tunnel water that is treated at QWTP to reduce turbidity. The treatment plant membranes will likely remove additional metals and water quality constituents typically present in Judge Tunnel water, particularly those associated with turbidity (lead and arsenic). These other constituents are not present in the Judge Tunnel water above their respective MCLs, but will likely see some reduction in levels after treatment at QWTP. The project also makes it possible to treat Judge Tunnel water in a future pretreatment plant. The pretreatment plant would be specifically designed to remove any water quality constituents of concern to appropriate levels for discharge to the drainage, and for use in the drinking water system with further treatment. Overall, the PCMC drinking water system will have a more reliable source with consistent water quality and stream water quality will improve.

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PARK CITY MUNICIPAL CORPORATION

JUDGE TUNNEL WATER LINE
ENVIRONMENTAL ASSESSMENT
March 2013

APPENDICES

APPENDIX A

Park City Soils Worker Health and Safety Notice

Soils Ordinance Worker Health and Safety Notice

Long before being recognized as an Olympic venue, Park City was also known as one of the great American silver mining towns. As a result, during a century of active mining, the Park City Mining District produced millions of ounces of silver as well as a substantial amount of mine tailing waste. Soils impacted with mine tailings are known to contain elevated levels of heavy metals, most notably lead. As a result, some soils within the soils ordinance pose an environmental and human health risk. The health risk is based on scientific studies that show long-term lead exposure can affect a child's neurological development as well as adversely affecting adult health. To manage the environmental and human health risks, Park City enacted the Landscaping and Maintenance of Soil Cover Ordinance to isolate mill tailings from human contact by mandating the installation of a six-inch clean topsoil cap on all lots within the soils ordinance boundary. However, as a contract worker that will be working within the Soils Ordinance District, the City feels that it is equally **important** to make you aware of the **heavy metals issues and the recommended precautions.** As a result, this notice is provided to you to make you aware of practices you can exercise for minimizing your exposure and protecting your family:

All workers that will be involved in generating soils within the ordinance boundary are recommended to wear Level "D" protection. Level D protection is the following work attire:

- **Standard work uniform** - Coveralls, long sleeve shirts, and long pants.
- **Steel toe boots (optional)** - In the event heavy equipment is utilized.
- **Hardhat (optional)** - In the event heavy equipment is utilized.
- **Safety glasses (optional)** - In the event dust is generated.
- **Dust mask (optional)** - In the event dust is generated.
- **Leather gloves**

Just as important to wearing proper protection, the City also recommends the following practices to avoid bringing mine waste constituents into the home.

- **Take off boots outside your home.**
- **If entering the home with boots on, wash your boots thoroughly before entering.**
- **Wash hands and face or other exposed areas after working with generated soils.**
- **Remove any clothes that have been exposed to soils and place them directly into the clothes washer.**
- **Leave gloves or other exposed equipment out of reach of children.**

Thanks for your help, and welcome to Park City.

APPENDIX B

Vegetative Cover Types

S083 Rocky Mountain Subalpine Mesic Meadow

NLCD Class Grassland/Herbaceous

Spatial Scale / Pattern Large patch

Concept Summary This Rocky Mountain ecological system is restricted to sites in the subalpine zone where finely textured soils, snow deposition, or wind-swept dry conditions limit tree establishment. It is found typically above 3000 m in elevation in the southern part of its range and above 1500 m in the northern part. These upland communities occur on gentle to moderate-gradient slopes. The soils are typically seasonally moist to saturated in the spring, but if so will dry out later in the growing season. These sites are not as wet as those found in Rocky Mountain Alpine-Montane Wet Meadow (CES306.812). Vegetation is typically forb-rich, with forbs contributing more to overall herbaceous cover than graminoids. Important taxa include Erigeron spp., Asteraceae spp., Mertensia spp., Penstemon spp., Campanula spp., Lupinus spp., Solidago spp., Ligusticum spp., Thalictrum occidentale, Valeriana sitchensis, Balsamorhiza sagittata, Wyethia spp., Deschampsia caespitosa, Koeleria macrantha, and Dasiphora fruticosa. Burrowing mammals can increase the forb diversity.

Range Rocky Mountains.

Additional Information

Southwest ReGAP Analysis Project Land Cover Datasets:	http://earth.gis.usu.edu/swgap/
NatureServe Explorer (for Ecological System and Alliance information):	http://www.natureserve.org/explorer/
USDA Natural Resources Conservation Service Plants Database:	http://plants.usda.gov/

Field Photos

PhotoID : UT071702JD02_1.JPG

PhotoID : UT071702JD15_1.JPG

PhotoID : UT071503JK28_2.JPG

S085 Southern Rocky Mountain Montane-Subalpine Grassland

NLCD Class Grassland/Herbaceous

Spatial Scale / Pattern Large patch

Concept Summary This Rocky Mountain ecological system typically occurs between 2200 and 3000 m on flat to rolling plains and parks or on lower sideslopes that are dry, but it may extend up to 3350 m on warm aspects. Soils resemble prairie soils in that the A-horizon is dark brown, relatively high in organic matter, slightly acid, and usually well-drained. An occurrence usually consists of a mosaic of two or three plant associations with one of the following dominant bunch grasses: Danthonia intermedia, Danthonia parryi, Festuca idahoensis, Festuca arizonica, Festuca thurberi, Muhlenbergia filiculmis, or Pseudoroegneria spicata. The subdominants include Muhlenbergia montana, Bouteloua gracilis, and Poa secunda. These large-patch grasslands are intermixed with matrix stands of spruce-fir, lodgepole, ponderosa pine, and aspen forests. In limited circumstances (e.g., South Park in Colorado), they form the "matrix" of high-elevation plateaus.

Range Occurs between 2200-3000 m in the Colorado Rockies.

Additional Information

Southwest ReGAP Analysis Project Land Cover Datasets:	http://earth.gis.usu.edu/swgap/
NatureServe Explorer (for Ecological System and Alliance information):	http://www.natureserve.org/explorer/
USDA Natural Resources Conservation Service Plants Database:	http://plants.usda.gov/

Field Photos

PhotoID : UT061303MD17_1.JPG

PhotoID : NM091002DC09_2.JPG

PhotoID : UT090602MD16_2.JPG

S091 Rocky Mountain Subalpine-Montane Riparian Shrubland

NLCD Class Woody Wetland

Spatial Scale / Pattern Linear

Concept Summary This system is found throughout the Rocky Mountain cordillera from New Mexico north into Montana, and also occurs in mountainous areas of the Intermountain region and Colorado Plateau. These are montane to subalpine riparian shrublands occurring as narrow bands of shrubs lining streambanks and alluvial terraces in narrow to wide, low-gradient valley bottoms and floodplains with sinuous stream channels. Generally it is found at higher elevations, but can be found anywhere from 1700-3475 m. Occurrences can also be found around seeps, fens, and isolated springs on hillslopes away from valley bottoms. Many of the plant associations found within this system are associated with beaver activity. This system often occurs as a mosaic of multiple communities that are shrub- and herb-dominated and includes above-treeline, willow-dominated, snowmelt-fed basins that feed into streams. The dominant shrubs reflect the large elevational gradient and include Alnus incana, Betula nana, Betula occidentalis, Cornus sericea, Salix bebbiana, Salix boothii, Salix brachycarpa, Salix drummondiana, Salix eriocephala, Salix geyeriana, Salix monticola, Salix planifolia, and Salix wolfii. Generally the upland vegetation surrounding these riparian systems are of either conifer or aspen forests.

Range Found throughout the Rocky Mountain cordillera from New Mexico north into Montana, and also occurs in mountainous areas of the Intermountain region and Colorado Plateau.

Additional Information

Southwest ReGAP Analysis Project Land Cover Datasets:	http://earth.gis.usu.edu/swgap/
NatureServe Explorer (for Ecological System and Alliance information):	http://www.natureserve.org/explorer/
USDA Natural Resources Conservation Service Plants Database:	http://plants.usda.gov/

Field Photos

PhotoID : UT070903JK19_1.JPG

PhotoID : UT062902LL03_2.JPG

PhotoID : UT071102JD14_2.JPG

S102 Rocky Mountain Alpine-Montane Wet Meadow

NLCD Class Emergent Herbaceous Wetland

Spatial Scale / Pattern Small patch

Concept Summary These are high-elevation communities found throughout the Rocky Mountains and Intermountain regions, dominated by herbaceous species found on wetter sites with very low-velocity surface and subsurface flows. They range in elevation from montane to alpine (1000-3600 m). These types occur as large meadows in montane or subalpine valleys, as narrow strips bordering ponds, lakes, and streams, and along toeslope seeps. They are typically found on flat areas or gentle slopes, but may also occur on sub-irrigated sites with slopes up to 10%. In alpine regions, sites typically are small depressions located below late-melting snow patches or on snowbeds. Soils of this system may be mineral or organic. In either case, soils show typical hydric soil characteristics, including high organic content and/or low chroma and redoximorphic features. This system often occurs as a mosaic of several plant associations, often dominated by graminoids, including Calamagrostis stricta, Caltha leptosepala, Cardamine cordifolia, Carex illota, Carex microptera, Carex nigricans, Carex scopulorum, Carex utriculata, Carex vernacula, Deschampsia caespitosa, Eleocharis quinqueflora, Juncus drummondii, Phippsia algida, Rorippa alpina, Senecio triangularis, Trifolium parryi, and Trollius laxus. Often alpine dwarf-shrublands, especially those dominated by Salix, are immediately adjacent to the wet meadows. Wet meadows are tightly associated with snowmelt and typically not subjected to high disturbance events such as flooding.

Range Found throughout the Rocky Mountains and Intermountain regions, ranging in elevation from montane to alpine (1000-3600 m).

Additional Information

Southwest ReGAP Analysis Project Land Cover Datasets:	http://earth.gis.usu.edu/swgap/
NatureServe Explorer (for Ecological System and Alliance information):	http://www.natureserve.org/explorer/
USDA Natural Resources Conservation Service Plants Database:	http://plants.usda.gov/

Field Photos

PhotoID : UT072800GM17_1.JPG

PhotoID : UT071703JK08_1.JPG

PhotoID : UT071703JK08_2.JPG

Southwest Regional GAP Analysis Project - Land Cover Descriptions

N80 Agriculture

NLCD Class Agriculture

Spatial Scale / Pattern Small or Large patch; Matrix

Concept Summary An aggregated landcover type that includes both Pasture/Hay (N81): areas of grasses, legumes, or grass-legume mixtures planted for livestock grazing or the production of seed or hay crops, typically on a perennial cycle, where pasture/hay vegetation accounts for greater than 20 percent of total vegetation, and Cultivated Crops (N82): areas used for the production of annual crops, such as corn, soybeans, vegetables, tobacco, and cotton, and also perennial woody crops such as orchards and vineyards, where crop vegetation accounts for greater than 20 percent of total vegetation. N82 also includes all land being actively tilled.

Range Was mapped by SWReGAP in AZ, CO, NM, NV, and UT.

Additional Information

Southwest ReGAP Analysis Project Land Cover Datasets:	http://earth.gis.usu.edu/swgap/
NatureServe Explorer (for Ecological System and Alliance information):	http://www.natureserve.org/explorer/
USDA Natural Resources Conservation Service Plants Database:	http://plants.usda.gov/

Field Photos

PhotoID : UT062000GM07_1.JPG

PhotoID : UT070601LL24_1.JPG

PhotoID : NM092102ES16_1.JPG

N22 Developed, Medium - High Intensity

Field Photos

NLCD Class Developed

Spatial Scale / Pattern Small or Large patch

Concept Summary Developed, Medium Intensity: Includes areas with a mixture of constructed materials and vegetation. Impervious surface accounts for 50-79 percent of the total cover. These areas most commonly include single-family housing units. Developed, High Intensity: Includes highly developed areas where people reside or work in high numbers. Examples include apartment complexes, row houses and commercial/industrial. Impervious surfaces account for 80 to 100 percent of the total cover.

Range Was mapped by SWReGAP in AZ, CO, NM, NV, and UT.

Additional Information

Southwest ReGAP Analysis Project Land Cover Datasets:	http://earth.gis.usu.edu/swgap/
NatureServe Explorer (for Ecological System and Alliance information):	http://www.natureserve.org/explorer/
USDA Natural Resources Conservation Service Plants Database:	http://plants.usda.gov/

N21 Developed, Open Space - Low Intensity

NLCD Class Developed

Spatial Scale / Pattern Small or Large patch

Concept Summary Open Space: Includes areas with a mixture of some construction materials, but mostly vegetation in the form of lawn grasses. Impervious surfaces account for less than 20 percent of total cover. These areas most commonly include large-lot single-family housing units, parks, golf courses, and vegetation planted in developed settings for recreation, erosion control, or aesthetic purposes. Developed, Low Intensity: Includes areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 20-49 percent of total cover. These areas most commonly include single-family housing units.

Range Was mapped by SWReGAP in AZ, CO, NM, NV, and UT.

Additional Information

Southwest ReGAP Analysis Project Land Cover Datasets:	http://earth.gis.usu.edu/swgap/
NatureServe Explorer (for Ecological System and Alliance information):	http://www.natureserve.org/explorer/
USDA Natural Resources Conservation Service Plants Database:	http://plants.usda.gov/

Field Photos

N11 Open Water

NLCD Class Open Water

Spatial Scale / Pattern Small or Large patch

Concept Summary Areas of open water, generally with less than 25% cover of vegetation or soil.

Range Was mapped by SWReGAP in AZ, CO, NM, NV, and UT.

Additional Information

Southwest ReGAP Analysis Project Land Cover Datasets:	http://earth.gis.usu.edu/swgap/
NatureServe Explorer (for Ecological System and Alliance information):	http://www.natureserve.org/explorer/
USDA Natural Resources Conservation Service Plants Database:	http://plants.usda.gov/

Field Photos

PhotoID : NM091002DC14_2.JPG

PhotoID : UT063000DM06_1.JPG

APPENDIX C

Soil Unit Descriptions

Hydric Soils

This table lists the map unit components that are rated as hydric soils in the survey area. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site (National Research Council, 1995; Hurt and others, 2002).

The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology (Cowardin and others, 1979; U.S. Army Corps of Engineers, 1987; National Research Council, 1995; Tiner, 1985). Criteria for all of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). These soils, under natural conditions, are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

Hydric soils are identified by examining and describing the soil to a depth of about 20 inches. This depth may be greater if determination of an appropriate indicator so requires. It is always recommended that soils be excavated and described to the depth necessary for an understanding of the redoximorphic processes. Then, using the completed soil descriptions, soil scientists can compare the soil features required by each indicator and specify which indicators have been matched with the conditions observed in the soil. The soil can be identified as a hydric soil if at least one of the approved indicators is present.

Map units that are dominantly made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions on the landform, and map units dominantly made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform.

The criteria for hydric soils are represented by codes in the table (for example, 2B3). Definitions for the codes are as follows:

1. All Histels except for Folistels, and Histosols except for Folists.
2. Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that:
   A. are somewhat poorly drained and have a water table at the surface (0.0 feet) during the growing season, or
   B. are poorly drained or very poorly drained and have either:
      i. a water table at the surface (0.0 feet) during the growing season if textures are coarse sand, sand, or fine sand in all layers within a depth of 20 inches, or
      ii. a water table at a depth of 0.5 foot or less during the growing season if saturated hydraulic conductivity (Ksat) is equal to or greater than 6.0 in/hr in all layers within a depth of 20 inches, or
      iii. a water table at a depth of 1.0 foot or less during the growing season if saturated hydraulic conductivity (Ksat) is less than 6.0 in/hr in any layer within a depth of 20 inches.
3. Soils that are frequently ponded for long or very long duration during the growing season.
4. Soils that are frequently flooded for long or very long duration during the growing season.

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Report—Hydric Soils

Hydric Soils– Summit Area, Utah, Parts of Summit, Salt Lake and Wasatch Counties				
Map symbol and map unit name	**Component**	**Percent of map unit**	**Landform**	**Hydric criteria**
126—Echocreek loam, 2 to 10 percent slopes				
	Kovich	4	Flood plains	2B3
	Toddspan	3	Flood plains	2B3
178—Wanship loam, 0 to 3 percent slopes				
	Kovich	5	Flood plains	2B3
179—Wanship-Kovich loams, 0 to 3 percent slopes				
	Kovich	30	Flood plains	2B3
	Toddspan	6	Valley floors, flood plains	2B3

Data Source Information

Soil Survey Area: Summit Area, Utah, Parts of Summit, Salt Lake and Wasatch Counties
Survey Area Data: Version 4, Dec 11, 2006

Map Unit Description

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this report, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. All the soils of a series have major horizons that are similar in composition, thickness, and arrangement. Soils of a given series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Additional information about the map units described in this report is available in other soil reports, which give properties of the soils and the limitations, capabilities, and potentials for many uses. Also, the narratives that accompany the soil reports define some of the properties included in the map unit descriptions.

Report—Map Unit Description

Summit Area, Utah, Parts of Summit, Salt Lake and Wasatch Counties

101—Agassiz-Rock outcrop complex, 30 to 70 percent slopes

Map Unit Setting

Elevation: 5,200 to 8,200 feet
Mean annual precipitation: 16 to 22 inches
Mean annual air temperature: 40 to 45 degrees F
Frost-free period: 60 to 90 days

Map Unit Composition

Agassiz and similar soils: 60 percent

Rock outcrop: 25 percent

Description of Agassiz

Setting

Landform: Mountain slopes
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Colluvium derived from limestone

Properties and qualities

Slope: 30 to 70 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 3 percent
Available water capacity: Very low (about 1.3 inches)

Interpretive groups

Land capability (nonirrigated): 7e
Ecological site: Mountain Shallow Loam (Mountain Big Sagebrush) (R047XA446UT)

Typical profile

0 to 6 inches: Very cobbly loam
6 to 14 inches: Very cobbly loam
14 to 24 inches: Bedrock

Description of Rock Outcrop

Setting

Landform: Escarpments, ridges
Down-slope shape: Linear
Across-slope shape: Linear

Interpretive groups

Land capability (nonirrigated): 8

106—Ayoub cobbly loam, 2 to 15 percent slopes

Map Unit Setting

Elevation: 5,800 to 8,000 feet
Mean annual precipitation: 16 to 22 inches
Mean annual air temperature: 40 to 45 degrees F
Frost-free period: 60 to 90 days

Map Unit Composition

Ayoub and similar soils: 85 percent

Description of Ayoub

Setting

Landform: Mountain slopes
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Slope alluvium derived from andesite over residuum weathered from andesite

Properties and qualities

Slope: 2 to 15 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to low (0.00 to 0.01 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.5 inches)

Interpretive groups

Land capability (nonirrigated): 6s
Ecological site: Mountain Gravelly Loam (Mountain Big Sagebrush) (R047XA406UT)

Typical profile

0 to 6 inches: Cobbly loam
6 to 12 inches: Gravelly clay loam
12 to 18 inches: Gravelly clay loam
18 to 23 inches: Gravelly clay loam
23 to 35 inches: Very cobbly loam
35 to 45 inches: Bedrock

118—Dromedary-Rock outcrop complex, 30 to 70 percent slopes

Map Unit Setting

Elevation: 5,800 to 10,200 feet
Mean annual precipitation: 22 to 35 inches
Mean annual air temperature: 35 to 40 degrees F
Frost-free period: 20 to 60 days

Map Unit Composition

Dromedary and similar soils: 70 percent
Rock outcrop: 15 percent

Description of Dromedary

Setting

Landform: Mountain slopes
Down-slope shape: Linear
Across-slope shape: Convex

Parent material: Colluvium and till derived from sandstone, shale and conglomerate

Properties and qualities

Slope: 30 to 70 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 5.7 inches)

Interpretive groups

Land capability (nonirrigated): 7e
Ecological site: High Mountain Stony Loam (Douglas Fir) (R047XA532UT)
Other vegetative classification: High Mountain Stony Loam (Douglas-fir) (047XA532UT_2)

Typical profile

0 to 6 inches: Gravelly loam
6 to 22 inches: Very cobbly sandy loam
22 to 44 inches: Very cobbly sandy clay loam
44 to 51 inches: Very cobbly sandy clay loam
51 to 60 inches: Very cobbly sandy clay loam

Description of Rock Outcrop

Setting

Landform: Escarpments, ridges
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex

Interpretive groups

Land capability (nonirrigated): 8

123—Dumps, mines

Map Unit Composition

Dumps, mines: 100 percent

Description of Dumps, Mines

Interpretive groups

Land capability (nonirrigated): 8

125—Dunford-Ayoub-Melling complex, 30 to 60 percent slopes

Map Unit Setting

Elevation: 6,200 to 8,000 feet
Mean annual precipitation: 16 to 22 inches

Mean annual air temperature: 40 to 45 degrees F
Frost-free period: 60 to 90 days

Map Unit Composition

Dunford and similar soils: 45 percent
Melling and similar soils: 20 percent
Ayoub and similar soils: 20 percent

Description of Dunford

Setting

Landform: Mountain slopes
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Colluvium derived from andesite

Properties and qualities

Slope: 30 to 60 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to low (0.00 to 0.01 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 5.2 inches)

Interpretive groups

Land capability (nonirrigated): 7e
Ecological site: Mountain Gravelly Loam (Oak) (R047XA410UT)

Typical profile

0 to 10 inches: Cobbly loam
10 to 21 inches: Gravelly clay loam
21 to 36 inches: Gravelly clay loam
36 to 46 inches: Bedrock

Description of Ayoub

Setting

Landform: Mountain slopes
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Colluvium derived from andesite

Properties and qualities

Slope: 30 to 60 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to low (0.00 to 0.01 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.5 inches)

Interpretive groups

Land capability (nonirrigated): 7e
Ecological site: Mountain Gravelly Loam (Mountain Big Sagebrush) (R047XA406UT)

Typical profile

0 to 6 inches: Cobbly loam
6 to 12 inches: Gravelly clay loam
12 to 18 inches: Gravelly clay loam
18 to 23 inches: Gravelly clay loam
23 to 35 inches: Very cobbly loam
35 to 45 inches: Bedrock

Description of Melling

Setting

Landform: Mountain slopes
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Colluvium derived from andesite

Properties and qualities

Slope: 30 to 60 percent
Depth to restrictive feature: 12 to 20 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 1.8 inches)

Interpretive groups

Land capability (nonirrigated): 7e
Ecological site: Mountain Shallow Loam (Mountain Big Sagebrush) (R047XA446UT)

Typical profile

0 to 6 inches: Extremely stony loam
6 to 19 inches: Very cobbly clay loam
19 to 29 inches: Bedrock

126—Echocreek loam, 2 to 10 percent slopes

Map Unit Setting

Elevation: 5,400 to 7,400 feet
Mean annual precipitation: 14 to 18 inches
Mean annual air temperature: 40 to 45 degrees F
Frost-free period: 70 to 100 days

Map Unit Composition

Echocreek and similar soils: 85 percent
Minor components: 7 percent

Description of Echocreek

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from sandstone, quartzite and shale

Properties and qualities

Slope: 2 to 10 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water capacity: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability (nonirrigated): 4s
Ecological site: Upland Loam (Basin Wildrye) (R047XA310UT)

Typical profile

0 to 7 inches: Loam
7 to 18 inches: Loam
18 to 26 inches: Loam
26 to 38 inches: Loam
38 to 45 inches: Loam
45 to 60 inches: Loam

Minor Components

Kovich

Percent of map unit: 4 percent
Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: Wet Fresh Meadow (Sedge) (R047XA008UT)

Toddspan

Percent of map unit: 3 percent
Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: Wet Fresh Meadow (Sedge) (R047XA008UT)

128—Fewkes gravelly loam, 2 to 8 percent slopes

Map Unit Setting

Elevation: 5,600 to 6,800 feet
Mean annual precipitation: 16 to 22 inches
Mean annual air temperature: 40 to 45 degrees F
Frost-free period: 60 to 90 days

Map Unit Composition

Fewkes and similar soils: 85 percent

Description of Fewkes

Setting

Landform: Fan remnants
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Slope alluvium derived from sandstone, quartzite and shale

Properties and qualities

Slope: 2 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water capacity: High (about 9.1 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability (nonirrigated): 3e
Ecological site: Mountain Loam (Mountain Big Sagebrush) (R047XA430UT)

Typical profile

0 to 12 inches: Gravelly loam
12 to 17 inches: Clay loam
17 to 22 inches: Clay loam
22 to 28 inches: Clay loam
28 to 40 inches: Clay loam
40 to 50 inches: Clay loam
50 to 60 inches: Clay loam

141—Heiners-Fewkes-Hades complex, 30 to 70 percent slopes

Map Unit Setting

Elevation: 5,400 to 8,000 feet

Mean annual precipitation: 14 to 22 inches
Mean annual air temperature: 40 to 45 degrees F
Frost-free period: 60 to 100 days

Map Unit Composition

Heiners and similar soils: 35 percent
Hades and similar soils: 25 percent
Fewkes and similar soils: 25 percent

Description of Heiners

Setting

Landform: Ridges on mountain slopes
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Colluvium derived from sandstone, conglomerate and shale

Properties and qualities

Slope: 30 to 70 percent
Depth to restrictive feature: 10 to 20 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water capacity: Very low (about 2.1 inches)

Interpretive groups

Land capability (nonirrigated): 7e
Ecological site: Upland Shallow Loam (Wyoming Big Sagebrush) (R047XA320UT)
Other vegetative classification: Upland Shallow Loam (Mountain Big Sagebrush) (047XA320UT_1)

Typical profile

0 to 3 inches: Gravelly loam
3 to 8 inches: Gravelly loam
8 to 12 inches: Very gravelly loam
12 to 19 inches: Very gravelly loam
19 to 29 inches: Bedrock

Description of Fewkes

Setting

Landform: Mountain slopes
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Colluvium derived from sandstone, quartzite and shale

Properties and qualities

Slope: 30 to 60 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water capacity: High (about 9.1 inches)

Interpretive groups

Land capability (nonirrigated): 7e
Ecological site: Mountain Loam (Mountain Big Sagebrush) (R047XA430UT)

Typical profile

0 to 12 inches: Gravelly loam
12 to 17 inches: Clay loam
17 to 22 inches: Clay loam
22 to 28 inches: Clay loam
28 to 40 inches: Clay loam
40 to 50 inches: Clay loam
50 to 60 inches: Clay loam

Description of Hades

Setting

Landform: Mountain slopes
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Colluvium derived from sandstone, quartzite and shale

Properties and qualities

Slope: 30 to 60 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 3 percent
Available water capacity: High (about 9.8 inches)

Interpretive groups

Land capability (nonirrigated): 7e
Ecological site: Mountain Loam (Oak) (R047XA432UT)

Typical profile

0 to 3 inches: Loam
3 to 18 inches: Loam

18 to 33 inches: Clay loam
33 to 44 inches: Clay loam
44 to 60 inches: Clay loam

151—Lucky Star gravelly loam, 30 to 60 percent slopes

Map Unit Setting

Elevation: 6,200 to 9,800 feet
Mean annual precipitation: 22 to 35 inches
Mean annual air temperature: 35 to 40 degrees F
Frost-free period: 20 to 60 days

Map Unit Composition

Lucky star and similar soils: 85 percent

Description of Lucky Star

Setting

Landform: Mountain slopes
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Colluvium derived from sandstone and conglomerate

Properties and qualities

Slope: 30 to 60 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 5.3 inches)

Interpretive groups

Land capability (nonirrigated): 7e
Ecological site: High Mountain Stony Loam (Aspen) (R047XA531UT)

Typical profile

0 to 6 inches: Gravelly loam
6 to 12 inches: Gravelly loam
12 to 25 inches: Very gravelly fine sandy loam
25 to 47 inches: Very cobbly sandy loam
47 to 62 inches: Very cobbly sandy clay loam
62 to 80 inches: Very cobbly sandy clay loam

154—Manila-Ant Flat loams, 2 to 8 percent slopes

Map Unit Setting

Elevation: 6,200 to 7,800 feet
Mean annual precipitation: 16 to 22 inches
Mean annual air temperature: 40 to 45 degrees F

Frost-free period: 60 to 90 days

Map Unit Composition

Manila and similar soils: 50 percent
Ant flat and similar soils: 35 percent

Description of Manila

Setting

Landform: Fan remnants
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Slope alluvium derived from conglomerate, sandstone and shale

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: High (about 9.8 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability (nonirrigated): 4e
Ecological site: Mountain Loam (Mountain Big Sagebrush) (R047XA430UT)

Typical profile

0 to 4 inches: Loam
4 to 15 inches: Loam
15 to 22 inches: Clay loam
22 to 40 inches: Clay
40 to 46 inches: Gravelly clay
46 to 60 inches: Clay

Description of Ant Flat

Setting

Landform: Fan remnants
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Slope alluvium derived from conglomerate, sandstone and shale

Properties and qualities

Slope: 2 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water capacity: High (about 10.0 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability (nonirrigated): 3e
Ecological site: Mountain Loam (Mountain Big Sagebrush) (R047XA430UT)

Typical profile

0 to 13 inches: Loam
13 to 19 inches: Clay loam
19 to 30 inches: Clay
30 to 45 inches: Clay loam
45 to 60 inches: Clay loam

157—Manila-Henefer complex, 8 to 15 percent slopes

Map Unit Setting

Elevation: 6,000 to 7,900 feet
Mean annual precipitation: 16 to 22 inches
Mean annual air temperature: 40 to 45 degrees F
Frost-free period: 60 to 90 days

Map Unit Composition

Manila and similar soils: 60 percent
Henefer and similar soils: 25 percent

Description of Manila

Setting

Landform: Fan remnants
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Slope alluvium derived from conglomerate, sandstone and shale

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: High (about 9.8 inches)

Interpretive groups

Land capability classification (irrigated): 4e

Land capability (nonirrigated): 4e
Ecological site: Mountain Loam (Mountain Big Sagebrush) (R047XA430UT)

Typical profile

0 to 4 inches: Loam
4 to 15 inches: Loam
15 to 22 inches: Clay loam
22 to 40 inches: Clay
40 to 46 inches: Gravelly clay
46 to 60 inches: Clay

Description of Henefer

Setting

Landform: Fan remnants
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Slope alluvium derived from quartzite, sandstone and shale

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 7.1 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability (nonirrigated): 4e
Ecological site: Mountain Loam (Oak) (R047XA432UT)

Typical profile

0 to 7 inches: Gravelly loam
7 to 12 inches: Gravelly loam
12 to 21 inches: Cobbly clay
21 to 30 inches: Cobbly clay
30 to 37 inches: Very gravelly clay loam
37 to 43 inches: Very gravelly clay loam
43 to 50 inches: Very cobbly sandy clay loam
50 to 60 inches: Very cobbly sandy clay loam

160—Parkcity-Dromedary gravelly loams, 30 to 70 percent slopes

Map Unit Setting

Elevation: 5,600 to 9,600 feet
Mean annual precipitation: 22 to 35 inches
Mean annual air temperature: 35 to 40 degrees F

Frost-free period: 20 to 60 days

Map Unit Composition

Parkcity and similar soils: 70 percent
Dromedary and similar soils: 20 percent

Description of Parkcity

Setting

Landform: Mountain slopes
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Colluvium derived from sandstone, limestone and quartzite

Properties and qualities

Slope: 30 to 60 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 6.3 inches)

Interpretive groups

Land capability (nonirrigated): 7e
Ecological site: High Mountain Stony Loam (Aspen) (R047XA531UT)

Typical profile

0 to 5 inches: Gravelly loam
5 to 19 inches: Gravelly loam
19 to 36 inches: Very cobbly loam
36 to 60 inches: Very cobbly loam

Description of Dromedary

Setting

Landform: Mountain slopes
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Colluvium and till derived from conglomerate, sandstone and shale

Properties and qualities

Slope: 30 to 70 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 5.7 inches)

Interpretive groups

Land capability (nonirrigated): 7e
Ecological site: High Mountain Stony Loam (Douglas Fir) (R047XA532UT)
Other vegetative classification: High Mountain Stony Loam (Douglas-fir) (047XA532UT_2)

Typical profile

0 to 6 inches: Gravelly loam
6 to 22 inches: Very cobbly sandy loam
22 to 44 inches: Very cobbly sandy clay loam
44 to 51 inches: Very cobbly sandy clay loam
51 to 60 inches: Very cobbly sandy clay loam

178—Wanship loam, 0 to 3 percent slopes

Map Unit Setting

Elevation: 6,300 to 7,200 feet
Mean annual precipitation: 16 to 22 inches
Mean annual air temperature: 40 to 45 degrees F
Frost-free period: 60 to 90 days

Map Unit Composition

Wanship and similar soils: 90 percent
Minor components: 5 percent

Description of Wanship

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from sandstone and conglomerate

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: About 20 to 30 inches
Frequency of flooding: Rare
Frequency of ponding: None
Available water capacity: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): 4w
Land capability (nonirrigated): 4w
Ecological site: Semiwet Fresh Meadow (Redtop) (R047XA004UT)

Typical profile

0 to 8 inches: Loam
8 to 14 inches: Loam

14 to 24 inches: Loam
24 to 26 inches: Extremely cobbly loamy sand
26 to 60 inches: Extremely cobbly loamy sand

Minor Components

Kovich

Percent of map unit: 5 percent
Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: Wet Fresh Meadow (Sedge) (R047XA008UT)

179—Wanship-Kovich loams, 0 to 3 percent slopes

Map Unit Setting

Elevation: 5,200 to 8,000 feet
Mean annual precipitation: 16 to 22 inches
Mean annual air temperature: 40 to 45 degrees F
Frost-free period: 60 to 90 days

Map Unit Composition

Wanship and similar soils: 55 percent
Kovich and similar soils: 30 percent
Minor components: 6 percent

Description of Wanship

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from sandstone and conglomerate

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: About 20 to 30 inches
Frequency of flooding: Rare
Frequency of ponding: None
Available water capacity: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): 4w
Land capability (nonirrigated): 4w
Ecological site: Semiwet Fresh Meadow (Redtop) (R047XA004UT)

Typical profile

0 to 8 inches: Loam
8 to 14 inches: Loam

14 to 24 inches: Loam
24 to 26 inches: Extremely cobbly loamy sand
26 to 60 inches: Extremely cobbly loamy sand

Description of Kovich

Setting

Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Alluvium derived from sandstone, quartzite and shale

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Available water capacity: Moderate (about 7.1 inches)

Interpretive groups

Land capability classification (irrigated): 6w
Land capability (nonirrigated): 7w
Ecological site: Wet Fresh Meadow (Sedge) (R047XA008UT)

Typical profile

0 to 9 inches: Loam
9 to 22 inches: Clay loam
22 to 29 inches: Clay loam
29 to 44 inches: Fine sandy loam
44 to 60 inches: Very gravelly loamy fine sand

Minor Components

Toddspan

Percent of map unit: 6 percent
Landform: Valley floors, flood plains
Down-slope shape: Linear
Across-slope shape: Convex, concave
Ecological site: Wet Fresh Meadow (Sedge) (R047XA008UT)

180—Yeates Hollow-Henefer complex, 3 to 15 percent slopes

Map Unit Setting

Elevation: 6,400 to 8,300 feet
Mean annual precipitation: 16 to 22 inches
Mean annual air temperature: 40 to 45 degrees F
Frost-free period: 60 to 90 days

Map Unit Composition

Yeates hollow and similar soils: 55 percent
Henefer and similar soils: 30 percent

Description of Yeates Hollow

Setting

Landform: Mountain slopes
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Slope alluvium derived from conglomerate, sandstone and quartzite

Properties and qualities

Slope: 3 to 15 percent
Depth to restrictive feature: 40 to 60 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.2 inches)

Interpretive groups

Land capability (nonirrigated): 6s
Ecological site: Mountain Stony Loam (Mountain Big Sagebrush) (R047XA461UT)

Typical profile

0 to 12 inches: Very stony loam
12 to 25 inches: Very cobbly clay
25 to 37 inches: Very cobbly clay
37 to 43 inches: Extremely cobbly clay loam
43 to 53 inches: Bedrock

Description of Henefer

Setting

Landform: Mountain slopes
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Slope alluvium derived from quartzite, sandstone and shale

Properties and qualities

Slope: 3 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Available water capacity: Moderate (about 7.1 inches)

Interpretive groups

Land capability (nonirrigated): 4e
Ecological site: Mountain Loam (Oak) (R047XA432UT)

Typical profile

0 to 7 inches: Gravelly loam
7 to 12 inches: Gravelly loam
12 to 21 inches: Cobbly clay
21 to 30 inches: Cobbly clay
30 to 37 inches: Very gravelly clay loam
37 to 43 inches: Very gravelly clay loam
43 to 50 inches: Very cobbly sandy clay loam
50 to 60 inches: Very cobbly sandy clay loam

181—Yeates Hollow-Henefer complex, 15 to 30 percent slopes

Map Unit Setting

Elevation: 6,200 to 8,400 feet
Mean annual precipitation: 16 to 22 inches
Mean annual air temperature: 40 to 45 degrees F
Frost-free period: 60 to 90 days

Map Unit Composition

Yeates hollow and similar soils: 55 percent
Henefer and similar soils: 30 percent

Description of Yeates Hollow

Setting

Landform: Mountain slopes
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Slope alluvium and colluvium derived from conglomerate, sandstone and quartzite

Properties and qualities

Slope: 15 to 30 percent
Depth to restrictive feature: 40 to 60 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.2 inches)

Interpretive groups

Land capability (nonirrigated): 6s
Ecological site: Mountain Stony Loam (Mountain Big Sagebrush) (R047XA461UT)

Typical profile

0 to 12 inches: Very stony loam

12 to 25 inches: Very cobbly clay
25 to 37 inches: Very cobbly clay
37 to 43 inches: Extremely cobbly clay loam
43 to 53 inches: Bedrock

Description of Henefer

Setting

Landform: Mountain slopes
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Slope alluvium and colluvium derived from quartzite, sandstone and shale

Properties and qualities

Slope: 15 to 30 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 7.1 inches)

Interpretive groups

Land capability (nonirrigated): 6e
Ecological site: Mountain Loam (Oak) (R047XA432UT)

Typical profile

0 to 7 inches: Gravelly loam
7 to 12 inches: Gravelly loam
12 to 21 inches: Cobbly clay
21 to 30 inches: Cobbly clay
30 to 37 inches: Very gravelly clay loam
37 to 43 inches: Very gravelly clay loam
43 to 50 inches: Very cobbly sandy clay loam
50 to 60 inches: Very cobbly sandy clay loam

182—Yeates Hollow-Henefer complex, 30 to 60 percent slopes

Map Unit Setting

Elevation: 5,600 to 8,400 feet
Mean annual precipitation: 16 to 22 inches
Mean annual air temperature: 40 to 45 degrees F
Frost-free period: 60 to 90 days

Map Unit Composition

Yeates hollow and similar soils: 55 percent
Henefer and similar soils: 30 percent

Description of Yeates Hollow

Setting

Landform: Mountain slopes
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Colluvium derived from conglomerate, sandstone and quartzite

Properties and qualities

Slope: 30 to 60 percent
Depth to restrictive feature: 40 to 60 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.2 inches)

Interpretive groups

Land capability (nonirrigated): 7e
Ecological site: Mountain Stony Loam (Mountain Big Sagebrush) (R047XA461UT)

Typical profile

0 to 12 inches: Very stony loam
12 to 25 inches: Very cobbly clay
25 to 37 inches: Very cobbly clay
37 to 43 inches: Extremely cobbly clay loam
43 to 53 inches: Bedrock

Description of Henefer

Setting

Landform: Mountain slopes
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Colluvium derived from quartzite, sandstone and shale

Properties and qualities

Slope: 30 to 60 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 7.1 inches)

Interpretive groups

Land capability (nonirrigated): 7e
Ecological site: Mountain Loam (Oak) (R047XA432UT)

Typical profile

0 to 7 inches: Gravelly loam
7 to 12 inches: Gravelly loam
12 to 21 inches: Cobbly clay
21 to 30 inches: Cobbly clay
30 to 37 inches: Very gravelly clay loam
37 to 43 inches: Very gravelly clay loam
43 to 50 inches: Very cobbly sandy clay loam
50 to 60 inches: Very cobbly sandy clay loam

183—Water

Map Unit Composition

Water: 100 percent

Data Source Information

Soil Survey Area: Summit Area, Utah, Parts of Summit, Salt Lake and Wasatch Counties
Survey Area Data: Version 4, Dec 11, 2006

APPENDIX D

Fugitive Dust Regulation

R307. Environmental Quality, Air Quality.
R307-205. Emission Standards: Fugitive Emissions and Fugitive Dust.
R307-205-1. Purpose.

R307-205 establishes minimum work practices and emission standards for sources of fugitive emissions and fugitive dust for sources located in all areas in the state except those listed in section IX, Part H of the state implementation plan or located in a PM10 nonattainment or maintenance area.

R307-205-2. Applicability.

R307-205 applies statewide to all sources of fugitive emissions and fugitive dust, except for agricultural or horticultural activities specified in 19-2-114(1)-(3) and any source listed in section IX, Part H of the state implementation plan or located in a PM10 nonattainment or maintenance area.

R307-205-3. Definitions.

The following definition applies throughout R307-205:

"Material" means sand, gravel, soil, minerals or other matter that may create fugitive dust.

R307-205-4. Fugitive Emissions.

Fugitive emissions from sources which were constructed on or before April 25, 1971, shall not exceed 40% opacity. Fugitive emissions from sources constructed or modified after April 25, 1971, shall not exceed 20% opacity.

R307-205-5. Fugitive Dust.

(1) Storage and Handling of Materials. Any person owning, operating or maintaining a new or existing material storage, handling or hauling operation shall minimize fugitive dust from such an operation. Such control may include the use of enclosures, covers, stabilization or other equivalent methods or techniques as approved by the executive secretary.

(2) Construction and Demolition Activities.

(a) Any person engaging in clearing or leveling of land greater than one-quarter acre in size, earthmoving, excavation, or movement of trucks or construction equipment over cleared land greater than one-quarter acre in size or access haul roads shall take steps to minimize fugitive dust from such activities. Such control may include watering and chemical stabilization of potential fugitive dust sources or other equivalent methods or techniques approved by the executive secretary.

(b) The owner or operator of any land area greater than one-quarter acre in size that has been cleared or excavated shall take measures to prevent fugitive particulate matter from becoming airborne. Such measures may include:

(i) planting vegetative cover,
(ii) providing synthetic cover,
(iii) watering,
(iv) chemical stabilization,
(v) wind breaks, or

(vi) other equivalent methods or techniques approved by the executive secretary.

(c) Any person engaging in demolition activities including razing homes, buildings, or other structures or removing paving material from roads or parking areas shall take steps to minimize fugitive dust from such activities. Such control may include watering and chemical stabilization or other equivalent methods or techniques approved by the executive secretary.

R307-205-6. Roads.

(1) The executive secretary may require persons owning, operating or maintaining any new or existing road, or having right-of-way easement or possessory right to use the same, to supply traffic count information as determined necessary to ascertain whether or not control techniques are adequate or additional controls are necessary.

(2) Any person who deposits materials that may create fugitive dust on a public or private paved road shall clean the road promptly.

R307-205-7. Mining Activities.

(1) Fugitive dust, construction activities, and roadways associated with mining activities are regulated under the provisions of R307-205-7 and not by R307-205-5 and 6.

(2) Any person who owns or operates a mining operation shall minimize fugitive dust as an integral part of site preparation, mining activities, and reclamation operations.

(3) The fugitive dust control measures to be used may include:

(a) periodic watering of unpaved roads,

(b) chemical stabilization of unpaved roads,

(c) paving of roads,

(d) prompt removal of coal, rock minerals, soil, and other dust-forming debris from roads and frequent scraping and compaction of unpaved roads to stabilize the road surface,

(e) restricting the speed of vehicles in and around the mining operation,

(f) revegetating, mulching, or otherwise stabilizing the surface of all areas adjoining roads that are a source of fugitive dust,

(g) restricting the travel of vehicles on other than established roads,

(h) enclosing, covering, watering, or otherwise treating loaded haul trucks and railroad cars, to minimize loss of material to wind and spillage,

(i) substitution of conveyor systems for haul trucks and covering of conveyor systems when conveyed loads are subject to wind erosion,

(j) minimizing the area of disturbed land,

(k) prompt revegetation of regraded lands,

(l) planting of special windbreak vegetation at critical points in the permit area,

(m) control of dust from drilling, using water sprays,

hoods, dust collectors or other controls approved by the executive secretary,

(n) restricting the areas to be blasted at any one time,

(o) reducing the period of time between initially disturbing the soil and revegetating or other surface stabilization,

(p) restricting fugitive dust at spoil and coal transfer and loading points,

(q) control of dust from storage piles through use of enclosures, covers, or stabilization and other equivalent methods or techniques as approved by the executive secretary, or

(r) other techniques as determined necessary by the executive secretary.

R307-205-8. Tailings Piles and Ponds.

(1) Fugitive dust, construction activities, and roadways associated with tailings piles and ponds are regulated under the provisions of R307-205-8 and not by R307-205-5 and 6.

(2) Any person owning or operating an existing tailings operation where fugitive dust results from grading, excavating, depositing, or natural erosion or other causes in association with such operation shall take steps to minimize fugitive dust from such activities. Such controls may include:

(a) watering,

(b) chemical stabilization,

(c) synthetic covers,

(d) vegetative covers,

(e) wind breaks,

(f) minimizing the area of disturbed tailings,

(g) restricting the speed of vehicles in and around the tailings operation, or

(h) other equivalent methods or techniques which may be approvable by the executive secretary.

KEY: air pollution, fugitive emissions, mining, tailings
Date of Enactment or Last Substantive Amendment: July 7, 2005
Notice of Continuation: September 7, 2005
Authorizing, and Implemented or Interpreted Law: 19-2-101; 19-2-104; 19-2-109

APPENDIX E

Class III Cultural Resource Inventory

BIGHORN ARCHAEOLOGICAL CONSULTANTS, LLC
1712 NORTH 320 WEST, OREM, UTAH 84057
(801) 368-8091 (801) 437-1736 FAX

Report Number 12-41

A Cultural Resource Inventory for the Judge Tunnel Water Line Alternative, Summit County, Utah.

By

Jon R. Baxter

for

Bowen Collins & Associates
154 East 14000 South
Draper, Utah 84020

Utah Project Number U12-HO-0576p

July 2012

Abstract

At the request of Bowen Collins & Associates, Bighorn Archaeological Consultants, LLC, has completed a project for the Park City Municipal Corporation that currently utilizes water draining from the Judge Tunnel portal located approximately one-half mile up Empire Canyon as a potable water source. There are times, however, when this water cannot be used due to either excessive turbidity or flows and consequently is discharged into Empire Canyon stream, which is tributary to Silver Creek. Park City Municipal Corporation proposes to install a water pipeline to convey this upset water to a new water treatment plant to be located at Quinn's Junction.

In February of 2010, Bighorn Archaeological Consultants, LLC summarize the existing body of data pertaining to the distribution of cultural resources in and around Park City in preparation for a cultural resource inventory of a preferred alignment. The current cultural archaeological inventory is an addendum to the previous inventory that resulted in the discovery of one isolated find, and no new cultural sites. During the cultural resource inventory one previously recorded historic archaeological site (42SM561) was relocated but not updated. The site is recommended not eligible for nomination to the National Register of Historic Places. However, a large number of historic buildings in Park City are listed on the NRHP. Although the majority of buildings listed on the Register are located downtown, a few buildings parallel the current project area along Northstar Road. As such, Bighorn recommends monitoring during construction along Northstar Road due to the potential for subsurface unexposed historic deposits that will need to be completed by a professional archaeologist, or Principal Investigator who meets the Secretary of the Interior's Professional Qualification Standards.

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Introduction

Park City Municipal Corporation (PCMC) currently utilizes water draining from the Judge Tunnel portal located approximately one-half mile up Empire Canyon as a potable water source. There are times, however, when this water cannot be used due to either excessive turbidity or flows and consequently is discharged into Empire Canyon stream, which is tributary to Silver Creek. PCMC proposes to install a 12" water pipeline to convey this upset water to a new water treatment plant to be located at Quinn's Junction. This will allow for the collection, conveyance and treatment of this water for use by PCMC.

In February of 2010, project planners at Bowen Collins & Associates requested that Bighorn Archaeological Consultants, LLC (Bighorn) summarize the existing body of data pertaining to the distribution of cultural resources in and around Park City in preparation for a cultural resource inventory of a preferred alignment. The following report is an addendum to the previous cultural resource inventory (Baxter 2010). This project was completed under Utah Project Number U12-HO-0576p. The fieldwork was completed by Robert Nash.

Location

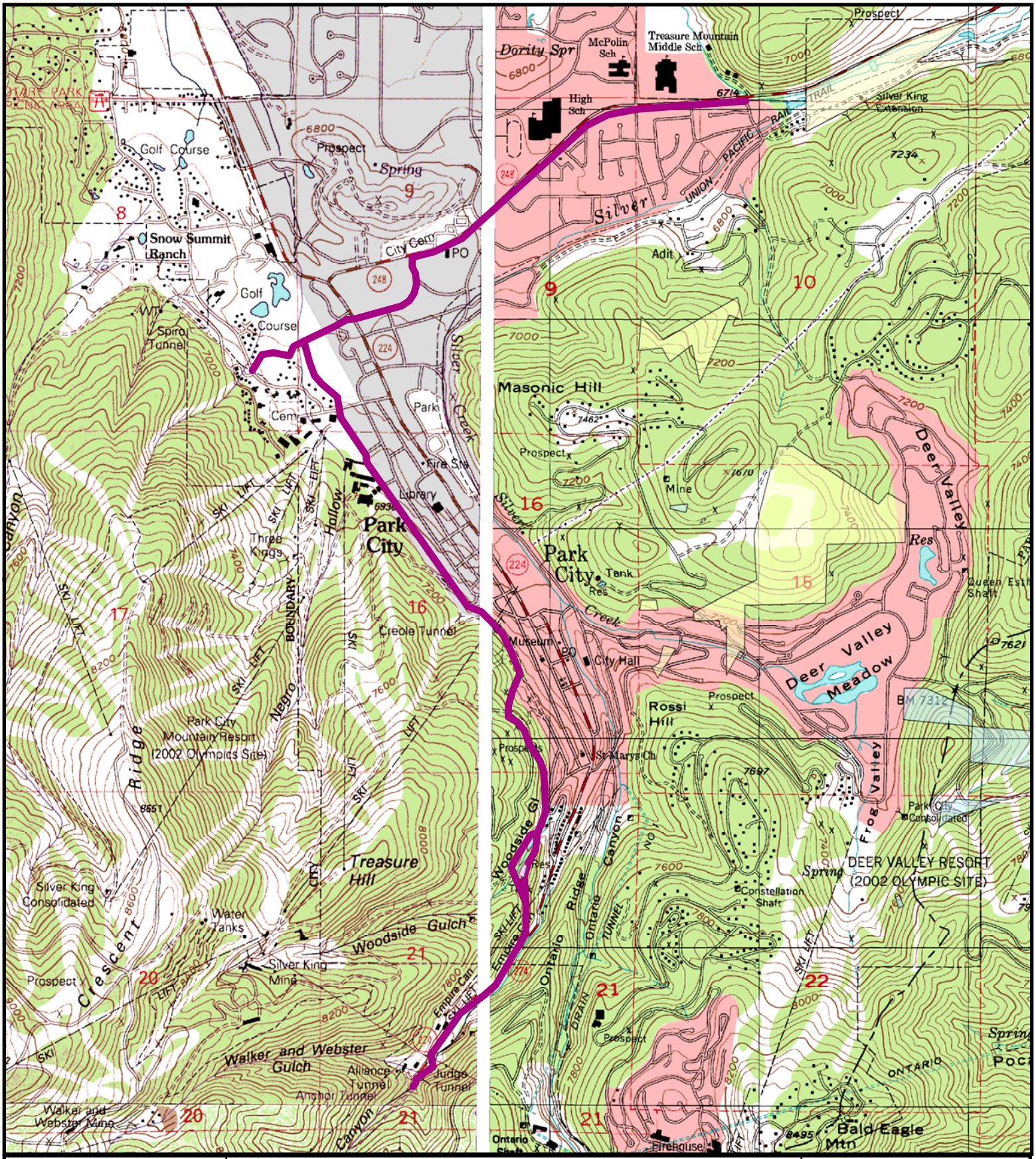
The Judge Tunnel Water Line project study area is comprised of an irregularly shaped water line which encompasses the eastern and north portion of Park City, Utah (Figure 1). Park City is located in north-central Utah, approximately 20 miles east of Salt Lake City. Park City is located in Summit County, Utah, in a mountainous region with an elevation of approximately 6,800 ft to 7,200 feet. Specifically, the project is located in Summit County, Utah in Township 2 South, Range 4 East, Sections 8, 9, 10, 16, and 21 (USGS 7.5' Topographic Quads: Park City East, Park City West, Utah).

Environment

The Study Area is located in the Middle Rocky Mountain Physiographic Province, which includes the Wasatch and Uinta Ranges. The project area is in the Wasatch Hinterland section (Stokes, 1986). Geologically, the majority of the Study Area consists of volcanic rock and alluvial deposits, with sedimentary rocks adjacent to the southern portion of the project area (Bromfield and Crittenden, 1971).

Culture History Overview

In the most general of terms, the Eastern Great Basin has a long record of human occupation. The archaeological record demonstrates a significant reliance on wetland and lake-edge resources by both hunters and gatherers during the Paleoindian, Archaic, and Late Prehistoric stages and horticulturalists during the Formative stage. Table 1 presents the cultural phases of the Great Basin, as outlined in general syntheses of the regional prehistory (Jennings 1978; Aikens and Madsen 1986; and Grayson 1993). A summary of mining in Park City is presented below.



Legend

- Project Alternative
- BLM
- SITLA
- Private

Figure 1. Judge Tunnel Alternative Project

BIGHORN ARCHAEOLOGICAL CONSULTANTS, LLC

0 1:24,000 1 mi

0 1 km

USGS 7.5' Series Quads: Heber City, Brighton, Park City East, Park City West, Utah

Summit County
T2S, R4E

N

Table 1. Cultural Phases of the Great Basin

Cultural Phase	Sub-phase	Approximate Time Period
Paleoindian		20,000 – 6,500 BC
Archaic	Early Archaic	6,500 – 3,500 BC
	Middle Archaic	3,500 – 1,500 BC
	Late Archaic	1,500 BC – AD 400
Formative (Fremont)		AD 400 - 1350
Late Prehistoric		AD 1350 – 1847
Historic		AD 1776 – 1950s

Park City Mining

The history of the area was well documented by Hampshire (1998) and elsewhere, though a brief overview is provided here. During the 1860s, soldiers from Fort Douglas, located near Salt Lake City, were sent into the surrounding mountains in search of precious metals. Silver was discovered in the Park City area, and the first recorded mining claim in the Park City Mining District was filed in 1869. By the 1880s, a large number of silver mines were operating throughout the area. Hundreds of miners and prospectors moved into the area, initially establishing temporary camps, but constructing homes and other more permanent structures over time. Park City was incorporated in 1884 with all of the comforts of a well-to-do mining town including saloons, mills, stores, and administrative buildings.

The following is a brief history of mining the vast deposits of silver, lead, and zinc ores in the Park Valley area (Utah History Encyclopedia [Notarianni 1994]).

> On 23 December 1869 the Young American lode became the first recorded claim of the district. However, it was the discovery of the rich Ontario mine that initiated efforts to mine lode ores and acted as the catalyst for Park City's rapid growth and reputation as a great silver mining camp. In 1872, shortly after its discovery, the mine was sold for $27,000 to George Hearst of San Francisco, and was run by R.C. Chambers until 1901. It reportedly produced some $50,000,000 of ore. The Pinon, Walker and Webster, Flagstaff, McHenry, Buckeye, and other area mines also shipped small amounts of ore. By 1879 the Ontario mine was flourishing, with houses springing up near the mine and lower down the canyon--the site of Park City.
>
> As a camp began to form, primarily with wooden structures erected to service the growing population, a fire destroyed several of its principal buildings in December 1882. In 1884 Park City incorporated as a city. In August 1885 another fire claimed another building.
>
> Mining operations continued to develop in the late 1880s and early 1890s. In 1885 John J. Daly formed the Daily Mining Company, and later the Daly West. The Daly-Judge (John Judge) Mining Company was formed in 1901, and consolidated its holdings in 1902. In 1892 David Keith, W.V. Rice, Thomas Kearns, A.B.

> Emery, and John Judge acquired a lease on the Mayflower claim; while working the interior they found that it extended into Silver King property. The Silver King Mining Company soon was incorporated for $3,000,000 and the well-managed property quickly attained high ranking among bonanza silver and lead mines. Park City boomed, and personalities such as the Silver Queen (Susanah Bradford Emery Holmes) added to the city's style and lore.
>
> The Panic of 1893 slowed economic growth, but Park City's expansion was decisively halted by a devastating fire. On 19 June 1898 fire raged through the Park City commercial district. The blaze was the greatest in Utah history. Main Street lay in ruins, with only a few gaunt walls remaining. Losses were estimated at over $1,000,000, and some 200 business houses and dwellings perished. With community support, however, the town rebuilt, replacing stone and brick structures with wood buildings, which were later improved again to brick and stone.

In 1928, the Park Consolidated Mining Company discovered a very large body of ore and became the largest silver producer in the United States. By World War II, the mining industry in Park City was in decline, and in the 1950s many of the buildings and structures in and around town were abandoned. Within a few short decades, however, Park City was reborn as a world-class skiing and winter recreational area.

Previous Research

Bighorn conducted a preliminary review of existing data pertaining to known cultural resource site locations in the study area. The file search was completed by Jon Baxter through the Utah Division of State History on February 25, 2010 and updated on June 14, 2012. Results from the Class I search revealed 17 previous cultural resource inventories (Table 1) and 13 previously recorded archaeological sites (Table 2) within ½ mile of the proposed water line.

Table 2. Previous Cultural Resource Inventories within ½ mile of the Judge Tunnel Water Pipeline

Project Number	Report Title or Description	Reference
U77-BL-0028	Unintentional Trespass Tract Near Park City	McDonald 1977
U79-BL-0033	Utah Power Buried Powerline	Cartwright 1979
U80-BL-0059	Park City- Murdock Powerline	Cartwright 1980
U81-BL-0053	Park City Tracts 3, 16, and 18	Cartwright 1981
U87-PD-0423	Park City Preferred P.O. at Prospector's Square	Russell 1987
U87-PD-0558	SR-224 Survey / Snyderville Test	Russell and Tipps 1987
U89-BC-0282	UDOT Additional Investigations of Snyderville	Southworth 1989
U91-BL-0430	Silver Maple Fence	Christensen 1991
U93-DH-0458	Park City Area Abandoned Mine Survey & Addendum	Rogge 1993
U97-A1-0610	SR-248 Survey (Utah Department of Transportation)	Horn 1997
U99-ST-0770	213 Acres at Flagstaff Mountain	Seddon 1999

U02-ST-0258	Selected Properties for Flagstaff Mountain Resort	Seddon 2002
U02-ST-0813	Class II Recon of 10 Selected Properties	Seddon 2002
U04-PD-0376	SR-224 Expansion	Tipps 2004
U04-UI-1112	Silver Mountain Extension – ESB	Mutaw 2004
U05-ST-0427	Historic Union Pacific Rail Trail Conversion	Ellis 2005
U07-ST-1132	East Canyon Creek	Whitesides 2007

Table 3. Previously Recorded Cultural Resource Sites within ½ Mile of the Judge Tunnel Water Pipeline

Site Name/Number	Site Type	Eligibility
42SM10	Historic Debris Scatter	Not Eligible
42SM183	Historic Echo Trestle	Eligible
42SM255	Historic Prospect Pit	Not Eligible
42SM256	Maple No. 2 Mine Prospect	Not Eligible
42SM312	Historic Dugout Site	Eligible
42SM314	Daly Mine Shaft No. 2 Complex	Eligible
42SM439	Ontario Shafts No. 1, 2, 3	Not Eligible
42SM440	Judge Mining and Smelting Company Office and Mine Complex	Eligible
42SM441	American Flag Mine	Eligible
42SM476	Judge Loading Station and Ontario Drain Tunnel No. 1	Eligible
42SM477	Historic Road	Eligible
42SM478	Historic Concrete Foundation	Not Eligible
42SM561	Historical Paved Road	Not Eligible

Cadastral plats/General Land Office (GLO) maps of the area were also reviewed for historic features, such as roads, ditches, structures, and trails. A review of these historic maps indicated the presence of several historic roads within the project area as early as 1869. Development associated with early Park City is illustrated on maps dating to 1876. By the end of the Nineteenth Century, the entire area was dominated by hundreds of mining claims (Appendix A).

Given that a large number of historic buildings in Park City are listed on the National Register of Historic Places (NRHP), the NRHP database was reviewed for historic buildings or districts near or bisected by the alternative alignment. The majority of buildings listed on the Register are located downtown. The Park City Main Street Historic District encompasses many of the commercial buildings along Main Street.

Inventory Methods

Bighorn completed the field inventory by walking the waterline alternative corridor that measured approximately 7,315 m (24,000 ft) in length (Figure 1). The proposed culinary water line was inventoried by walking a 15 m (ca. 50 ft) wide pedestrian transect along either side of the proposed center-line for a total of a 30 m (100 ft) corridor. Total project area measures 55 acres. A majority of the project area has been disturbed due to recreational traffic use, maintained public roads, dirt access road, and recreational trails in the area.

Cultural resources encountered during an inventory were recorded as sites or isolates. In particular, historic, prehistoric, or archaeological features or any archaeological or historic anomaly that contains, at a minimum, greater than ten artifacts in a 10-meter diameter area, or a combination of features and artifacts, are considered a site. All other cultural materials that do not meet the above criteria are considered isolated artifacts, or single artifacts that little is known about and their significance cannot be determined. Direct, physical evidence in the survey area was required before either a cultural resource site or isolate was defined. Direct evidence was also required for linear sites crossing the APE, including historic roads, railroads, road alignments, trails, ditches, or telephone poles that may have crossed the project corridor.

Sites and isolated finds, if located, were plotted on a 7.5 minute USGS topographic map using data obtained from a Trimble GeoXT global positioning system (GPS). All GPS data will be submitted to the appropriate agencies to incorporate into their databases. All sites were evaluated against the criteria set forth by the National Register of Historic Places (NRHP).

Inventory Results

During the cultural resource inventory one new isolated find was recorded, and one previously recorded historic archaeological site (42SM441) was relocated but not updated.

Isolated Find

Examination of the proposed project corridor resulted in the discovery and documentation of one isolated find (Table 3). Location information for the isolated find is provided in Appendix B. Isolated finds are categorically not eligible for consideration under the criteria of the NRHP and, as such, will not hinder the development of the project.

Table 4. Isolated Finds

Isolate Number	Type
IF-01	Cement Water Tank

Previously Recorded Cultural Resource Site

42SM561

Site 42SM561 is a historical paved road, currently Bonanza Drive, between the intersections of SR-224 at Deer Valley Drive and SR-248 at Kearns Boulevard in Park City, Summit County, Utah. An 1876 GLO map indicates a route for the "Stake Road" is in the same general location as the current Bonanza Drive. The Utah Department of Transportation (UDOT) originally recorded this section of road in 2009

Bighorn revisited the site in July 2012. A thorough review of the original site form indicates the site was documented thoroughly and that UDOT provided an accurate assessment of the site as well as its current condition and overall disposition. No new features were identified in July 2012. As such, no update was necessary.

Site 42SM561 "Stage Road" was originally recommended as not eligible under criteria A, B, C, and D by UDOT in January 2009. Upon re-visitation to the site, Bighorn concurs with UDOT's assessment and recommendation. No change to the site nomination, or not eligible, is recommended.

Summary and Recommendations

At the request of Bowen Collins & Associates, Bighorn Archaeological Consultants, LLC, has completed a project for the Park City Municipal Corporation that currently utilizes water draining from the Judge Tunnel portal located approximately one-half mile up Empire Canyon as a potable water source. There are times, however, when this water cannot be used due to either excessive turbidity or flows and consequently is discharged into Empire Canyon stream, which is tributary to Silver Creek. Park City Municipal Corporation proposes to install a water pipeline to convey this upset water to a new water treatment plant to be located at Quinn's Junction.

In February of 2010, Bighorn Archaeological Consultants, LLC summarized the existing body of data pertaining to the distribution of cultural resources in and around Park City in preparation for a cultural resource inventory of a preferred alignment. During the cultural resource inventory in July of 2012, one previously recorded historic archaeological site (42SM561) was relocated but no updated was needed. The site is recommended not eligible for nomination to the National Register of Historic Places.

As previously noted, a large number of historic buildings in Park City are listed on the NRHP. Although the majority of buildings listed on the Register are located downtown, a few buildings parallel the current project area along Northstar Road. As such, Bighorn recommends monitoring during construction along Northstar Road due to the potential for subsurface unexposed historic deposits that will need to be completed by a professional archaeologist, or Principal Investigator who meets the Secretary of the Interior's Professional Qualification Standards.

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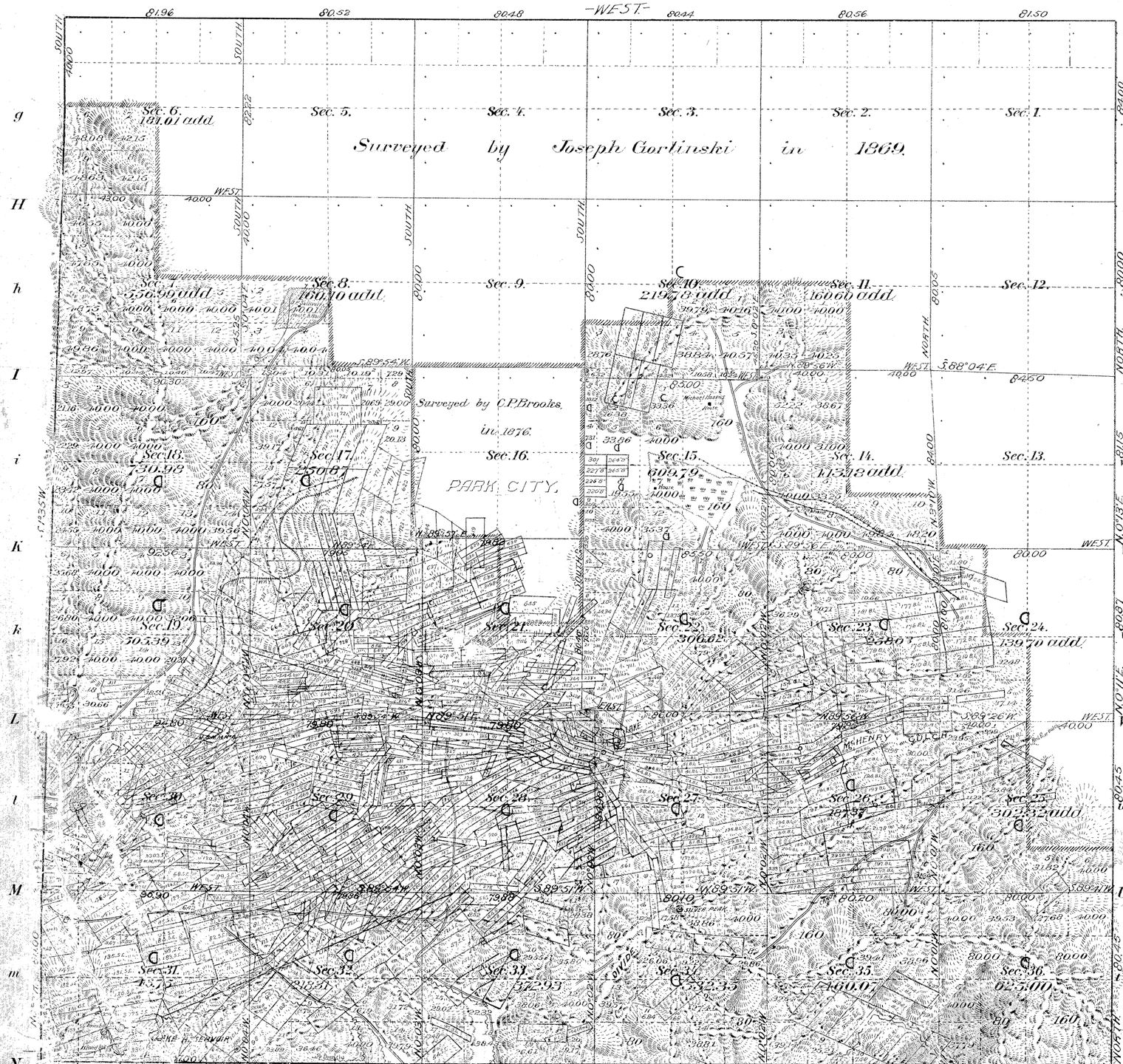
Appendix A
Historic GLO Maps

Township Nº 2 South Range Nº 4 East of Salt Lake Base & Meridian



Lat, 40°36'N.
Long, 111°27'W.

Reference ▨ Boundary betw Old & New Areas.
◖ Mineral Land.

Mineral Claims,		7310.78
Mineral Land,		5706.44
Public Land,		1922.63
Total number of Acres		14939.85 additional

Surveys Designated	By Whom Surveyed	Nº & Date of Contract	Amount of Surveys M.	Chs	Lks	When Surveyed	Mean Declination
S. Township lines	Andrew J. Stewart Jr.	203-Dec 27-1895	6	17	00	Aug 2-3- 1897	16°30'E.
Subdivisions	" " " "	" " " "	37	14	95	" 5-21- "	
Closings.	" " " "	" " " "		72	20	" " " "	
W. Township line	" " " "	" " " "	4	42	74	" 4- "	
N " "	Joseph Gorlinski	2 May 29-1869	6	00	00	" 14- 1869	
E " "	" "	" " " "	6	00	00	" 9 "	
W. " "	J. E. Freeman.	Sept 4- 1871	1	00	00	Sept 16- 1871	
W " "	Joseph Gorlinski.	2 May 29- 1869		40	00	Nov 3- 1869	

The above Map of Township Nº 2 South of Range Nº 4 East of the Salt Lake Base & Meridian, Utah, is strictly conformable to the field notes of the survey thereof on file in this Office, which have been examined and approved.

Surveyor General's Office,
Salt Lake City Utah
March 21st 1899

Surr Genl

BLUE LEDGE, UINTAH, AND SNAKE CREEK MINING DISTS.

BLUE LEDGE. MINING CLAIMS.

Nº	Name.
37	McHenry (amd)
39	Emma.
39"A"	Clara.
39"B"	Clara M.S.
40	Hawkeye.
41	Lowell Mine & Co (am)
42	Lady of the Lake.
44	Monticello.
46	Jones.
47	Silver Hill.
48	Indian Queen.
49	McHenry Nº 2
50	Kate Walker.
51	Joe Walker.
52	Idabella.
53	Wilson & Barrett
54	Free Silver Mine
55	Ontario Nº 2.
56	Ontario Bonanza.
57	Pocotello.
58	Walker.
59	Wasatch.
60	Sampson.
61	May.
62	Mohawk.
63	Jones Mine Nº 2
64	Erie.
65	White Pine Gould & Silver Gm Lode
66	Homestake.
67	Homestake Nº 2
68	Utah.
69	Alladin.
70	Nail Driver.
71	May Fly.
74	Whitford.
75	Lena.
78	Colorado (amd)
79	Mary Ellen.
80	Tiger.
81	Henry M. Stanley
82	North Star Nº 3
83	Maggie.
84	Mazeppa.
85	Hawkeye Nº 2
86	I. X. L.
87	Pine C (amd)
88	Boulder.
89	Ida Bell Nº 2
90	Boulder Nº 3
91	Portland.
92	Daniel O'Connell (am)
93	Banister.
94	South West Bonanza
95	Dollar of our Dads.
96	Nevada.
97	Key-West.
98	Glenco.
99	Sofia.
100	North Side Nº 3
101	Norris.
102	Olive Branch
103	Cataract.
104	Vulture (amd)
105	Fairmount (Re-am)
106	Custer.
107	Augustus (Re-am)
108	Romeo.
109	Oneida Nº 2
110	Iron Horse (am)
111	Little Kate.
112	Fourth of July Nº 2
113	Golden Age.
114	Silver Age.
115	Juliet.
116	Summit.
117	Clipper Nº 2
118	Little Giant.
119	Worlds Wonder
120	Cumberland.
121	Seting Bull.
122	Peerless.
123	Shilooh.
124	Senator Mine & Co
125	Excellent.
126	Hellen Jessey.
127	Ball Mountain
129	President.
133	Hampton.
134	Woodland.
135	Blaine
137	Summit.
138	Bald Eagle.
139	Red Cloud.
140	Flora McDonald
141	Red-Cloud Nº 2
142	Red-Cloud Nº 3 (am)
143	Red Cloud Nº 4 (am)
144	Central.
145	Side Hill.
146	Caledonia (am)
147	Essex.
148	Constellation.
149	Pilot.
150	Legal Tender.
151	Monroe Doctrine
152	Lucy.
153	Rattler.
154	Rattler Nº 2
155	Thurman.
158	Murray.
159	Utah Terra.
160	Bandano.
161	Nail Driver.
162	Silver King.
163	Caladonia Nº 2
164	Argus (am)
165	Garao.
166	Lugano.
167	Estella.
168	Sun-Set Nº 2
169	Mazzeppa Nº 2
170	Rising Star.
171	Independence
172	Pioche Nº 2
173	Pioche Nº 3
174	Pioche Nº 4.
175	Pioche Nº 7
176	Pioche Nº 8
177	Pioche Nº 9
178	Pioche Nº 10.
179	Pioche Nº 11.
180	Pioche Nº 12
181	Pioche Nº 14
182	Washington
183	Montana.
184	South Dakota.
185	North Dakota.
187	Tom Paine.
188	Age of Reason.
189	Curtis.
190	N. Lode.
191	Belcher Nº 1
192	Belcher Nº 2
193	Belcher Nº 3
194	Belcher Nº 4
195	Belcher Nº 5
196	Sardsfield.
197	Fourth of July Nº 3
198	Fourth of July Nº 4
200	W. H. C. Lode.
201	Rose Bud.
202	Ammie.
203	Cordelia.
204	Minnie.
205	Gold Standard
205	Silver Standard
205	Spotted Fawn.
206	Miriam Nº 1
206	Miriam Nº 2
207	San Diego.
208	Connelly.
209	Chambers.
210	Pioche.
210	Pioche Nº 6
211	Leone.
211	Mountaineer Nº 1
211	Mountaineer Nº 2
211	Mountaineer Nº 3
211	Neptune.
212	Ebenezer
2956	George H. C. Root J.C.
2959	Obediah.
2981	Copper Queen
3006	Debs.
3020	Pay Roll.
3208	Toledo.
3208	North Star.
3208	Valeo.
3208	Vega.
3208	Torpedo.
3278	Lincoln.
3288	City of Edinburg
3341	Mono.
3341	Alma.
3372	Dagmar.
3372	King.
3426	James Thompson
3427	James Thompson Nº 2

UINTAH. MINING CLAIMS.

Nº	Name.
37	Ontario M.C. & M.S.
38	Flagstaff.
39	Nottawa.
40	Walker.
40	Walker Ext'n
41	Buckey.
42	Pinyon.
42	Pinyon Ext'n
44	Pioneer.
45	Parley's Park.
46	Swisserland (am)
47	Banner.
47"A"	Banner M.S.
48	Last Chance M.S.
48"A"	Last Chance
49	Washington Tunnel Mine
50	O'Brian.
51	Clara Davis.
52	Switzerland.
53	Little Mc
54	Epperson.
55	Ext'n Nº 1 Ontario
56	Woodside.
57	Whitford.
58	Kervin.
59	Whitford.
60	Last Chance Nº 2
61	Marsac (am)
62	Quinn.
63	Rosina.
64	Hidden Treasure
65	Jennie Powers
66	Silver Treasure
67	Little Maud (am)
68	Great Eastern
69	Wide West Nº 2 M.S.
70	Henrietta (am)
71	McKay.
72	Challenger.
73	Cora.
74	Celeste.
75	Cave.
76	Prins Oscar of Sweden
77	Silver Queen
78	Union (am)
79	Centennial.
80"A"	Washington M.S.
80"A"	Central (am)
81	Narrow Gauge.
82	Dreadnought Tun
83	Saw Mill
84	Democrat.
85	Centennial.
86	Wasatch.
87	Superior.
88	Sampson.
89	Sampson Nº 2
90	Grand Prize
91	Chief of the Park
92	Uintah.
93	Thunderer.
95	American Flag
96	War Eagle.
97	Park City.
98	Emma Jane
99	Ossian.
100	Water Witch.
101	Europe (am)
103	Garvey Mine
104	Eureka.
105	Vermont.
106	Fairview.
107	Revenue.
108	St Louis.
109	Magnolia.
110	Eudora (am)
111	Star Gazer (am)
112	Miners Delight
113	Eldorado.
114	Woodbine.
115	Montezuma.
116	Hidden Treasure Nº 2
117	Manhattan.
118	Monitor.
119	Rebecca (am)
120	Orient.
121	Occident.
122	Union Tun Nº 2 (am)
123	Union Tun Nº 1
124	Jessey.
125	Friday.
126	Boss.
127	Baby Mine.
128	Jupiter (Am)
129	King William.
130	New Found Treas
131	Solid Muldoon.
133	Dakota.
134	Little Maggie.
135	Fortune Teller.
136	Square Deal.
137	Ameer.
138	Missouri.
139	Convict.
140	Glenn.
141	Tycoon.
142	Tidal Wave.
143	Morning Star.
146	Fremont.
147	Putman.
148	Toronto.
149	Saratoga.
152	Bonny Ida.
153	Wide West Nº
154	Sandy.
155	Ram's Horn.
156	Rose Bud.
157	Mountain Green
158	Addie.
159	Tina (am)
160	Fraction.
161	Munadore.
162	Jeanette Nº 2
163	Thayne.
164	Lady Morgan.
165	Abby.
166	Thurman.
167	Jordan.
168	Nellie Wall.
169	Mary Ann.
170	Mountain Top (am)
171	Domingo.
172	Ohio.
173	Barrios (am)
174	Climax (am)
175	Golden Chariot.
176	Stocke.
177	Bible Back (am)
178	Samuel (am)
179	Fallon (am)
180	Black Diamond
181	Nemrod.
182	Golden Gate.
183	Roaring Lion (am)
184	Wild Bota (am)
185	Ida Belle.
186	Champion.
187	Congress.
188	De Soto.
189	Dark Horse.
190	Zach Chandler (am)
191	Lincoln.
192	Nero.
193	Rebellion (am)
194	Mulkahy (am)
195	Shamus O'Brian (am)
196	Aetna.
197	Heda.
198	Kit Carson Nº 2
199	Come at Last.
200	Wild Rover.
201	Sandy Hook.
202	Alice Ryan.
203	Quincy (am)
205	Bellman.
207	Comstock.
208	Black Hawk.
209	Black Bear.
210	Centaur.
211	Phoenix.
212	Red-Fox.
213	Stuart.
214	Brave Columbia
215	Constitution.
216	Cumberland.
217	Monroe Doctrine
218	Hanna.
220	May Flower Ledge & Co. Mill Site.
221	Clara Nº 2.
221	General Dodge
223	Broadway.
224	Triangle.
225	Dr. W. F. Smith (am)
226	Olive Branch & M.S.
227	Godell & M.S.
228	Red Pine (am)
229	Parnell.
230	Tiger.
231	Crown Point (am)
232	Wolverine.
233	Illinois.
234	Racine.
235	Senate.
236	James A Garfield
237	Buckeye.
238	Mountain Chief (am)
239	Mazeppa.
240	New Found Treas
241	Minooka.
242	Daly.
243	Ottawa.
244	Silver Chief.
245	Vulcan.
246	Old Judge.
247	Silver Key.
248	Journal.
249	Pat Casey.
250	Buck-Eye Ext
251	Albion.
252	Keene.
253	Hoyt (re-Sur)
254	Woodside Ext.
255	Tender Foot.
256	Huron Mine
257	San Joaquin
258	Virginia.
259	Arms.
260	Hope.
261	A. Garfield.
263	Crown Prince
264	Yaup.
264	Yaup M.S.
265	Trump.
265	Trump M.S.
266	Nettie.
267	Plutus.
268	Antelope.
269	Gazelle.
270	Daylight.
272	Missouri
273	Viola.
274	U. J. Wenner.
275	Bruser.
276	Disappointment
277	Ohio.
278	Meno. Nº 6.
279	Liberty.
280	Chapman.
282	Queen of the Hills
283	Montana.
284	Bell Mont.
285	Keokuk.
288	Ubet.
294	Revised (am)
295	Conklin.
297	Empire.
298	Aurora.
299	Hope.
300	Tiger.
301	Mazeppa M.S.
302	Fountain Lode & Mill Site.
303	Regulator.
304	Consolidated
305	Standard.
306	Progress.
307	Frontier.
308	Intervention
309	Russian Bear
310	White Bear.
311	Mat & Pat.
312	Tip-Top.
313	Jeremiah.
316	Forty Nine.
317	Annex.
318	Almy.
320	Scrap Lode & Mill Site.
321	Fraction.
322	Diamond.
323	Esther.
324	Matthew.
325	Keno.
326	Three Ply.
327	Custer.
329	Summit.
330	New York.
331	Sample.
332	Central.
333	Trainer.
334	Chance Nº 2
335	Chapter Lode & Mill Site.
336	Romany.
337	Roomer.
338	Remnant.
339	Mountain Spring
340	Sheridan.
341	Pay-Rock.
342	Pay-Rock Nº 2
343	Short Line.
344	Reward.
345	Lancet.
346	Japan.
347	Cuba.
348	Oregon.
349	Madura.
350	Solace.
351	Elkhorn.
352	Apex Nº 2
353	Ruins of Pompeii
354	Know You Dont.
355	Commandry.
356	El Madhi.
357	Finis.
358	Red Warrior.
359	Plevna (am)
360	Midnight.
361	Neptune.
862	Story.
363	M.C. Lode.
364	Sterling.
365	Grizzley.
366	Marvatta.
367	Benton.
368	Danville.
369	Lizarena.
370	St Louis.
371	Egypt (am)
372	Belmont (am)
373	Monno.
374	S.E. Ext Maybell
375	You Bet Your Boots Nº 12 (am)
376	Soudan.
377	Euphrates (am)
378	Overall.
379	Erwin.
380	Minnie Hubbard
381	Woods.
384	Addenda.
387	Ocean Wave.
388	Keystone.
389	Dolphin.
390	Whale.
391	Riel (am)
392	Stewart (am)
393	American Bird
394	Emaly (am)
395	Great Basin.
396	Great Basin Nº 2
397	Scott.
398	Marshall.
399	Marshall Nº 2
400	Rosebud Nº 2 (am)
401	Mountain Green Nº 2 (am)
402	Lucky Jim Nº 2 (am)
403	Lucky Jim.
405	Abby.
406	Rose Bud.
407	Sea Foam (am)
408	Storm King (am)
409	Little Helen.
410	Little Edith (am)
411	Minnie Haha.
412	Herat (am)
413	Hecat Nº 2.
414	Eastman (am)
415	Russian.
417	India.
418	Egypt.
419	Longfellow (am)
420	Chancellor (am)
421	Abe.
422	Bird.
423	Comstock Nº 2
424	Little Reb.
425	Little Nettie (am)
426	Apollo.
427	Cleveland.
428	Hendricks.
429	Mikado (am)
430	Potomac (am)
431	Hecla.
432	Victoria.
433	Othello.
434	Iago.
435	Hamlet.
436	Ophelia.
437	Stormont.
438	Minnie Kesel.
439	Zephyr.
440	Dick Turpin.
441	Lake Shore Nº 1
442	War Eagle Nº 2 (am)
443	Lucky (am)
444	North Star.
445	Spring.
447	Sag (am)
448	Uncle Charles.
449	Black Rock (am)
450	Harvood.
452	Corner Stone.
453	West Ontario Nº 1
454	West Ontario Nº 2
455	West Ontario Nº 3
456	West Ontario Nº 4
457	Lake Shore Nº 2
458	Lake Shore Nº 3
459	Lake Shore Nº 4
460	Georgeanna Nº 1
461	Georgeanna Nº 2
462	Georgeanna Nº 3
463	Georgeanna Nº 4
464	Hirmet Nº 2
465	Hirmet Nº 3
466	Hatty Green Nº 1
467	Hatty Green Nº 2
468	Hatty Green Nº 3
469	Key-Stone.
470	Little Pittsburgh
471	Puritan City.
472	Hyde-Park.
473	Austin.
474	Franklin.
475	Grundy.
476	County.
477	Gifford.
478	Butcher Boy.
479	Belcher (am)
485	Look-Out (am)
486	Clambia.
487	Rupert.
488	Triangle (am)
489	Naragansett (am)
490	Prospect (am)
491	Potasia (am)
492	Pelican (am)
493	Maryland.
494	Gauge Game.
495	Molly Stark.
496	Cashier (am)
497	Cora.
498	Ella.
499	Adelaide
500	Cumberland Nº 2
501	Quinn.
502	Parrott.
503	Alaska (am)
504	Appomattox.
505	Pinafore.
506	Adonis.
507	Evangeline
508	Rochester.
509	Sonora.
510	Omega.
511	Michael Davitt
512	Minisink.
513	Croppy Boy.
514	Lillie of the West
515	Lucky Jack.
516	Holy Terror.
517	Lillie of the West.
518	John Mackey (am)
519	Rory of the Hill.
521	Hunter.
522	Kennedy
523	Shortleff.
524	T. J. Pound.
525	Tribune (am)
526	Mineral Spr (am).
527	Alta (am)
528	Red-Cloud (am)
529	Lucky Boy.
530	Crown Point (am)
531	Mountain Bell (am)
533	Dispute.
534	Mont Cenis (am)
535	Housatonic.
536	Baltimore.
537	Magnet.
538	Lockport.
539	Fredrick.
540	Bryson.
541	Maria.
542	Jake Nº 2
543	Maquel.
544	Peeler.
545	Jessie.
546	Bay Horse Nº 2
548	Horse Shoe (am)
549	Abdallah.
550	J. H. Rogers.
551	Mary Jane (am)
552	C. J. Nelson.
553	Mary Allen.
554	C. M. Falls.
555	G. G. Tate (am)
556	Iowa.
557	Iowa Nº 2
558	Nachusa.
559	Chelsea.
560	R. P. H. Lode.
561	J. I. C. Lode.
562	Viola Nº 2
563	Undershirt.
564	Overshirt (am)
565	Easter Hale.
566	Silver Dollar.
567	Steamboat
568	Mountain View
569	Columbia.
570	Clipper.
571	Helen (am)
572	Bald Eagle.
573	4th of July.
574	Home Rule.
575	Sultan.
576	Idaho.
577	Emerald.
578	Ravenswood
580	Pirate King
581	Pontiac.
582	Ella.
583	Alida.
584	Kid.
585	Maud H.
586	Sweden.
587	Orlando.
588	Oro.
589	Nero.
590	Wizard.
591	Ever Green.
598	Wizard Nº 2
599	Northland (am)
600	North Pole.
601	Nevada.
602	Gopher.
603	Side Winder
604	High Binder
605	Hammondville
606	Volunteer Nº 2
607	May Flower Nº 7
608	Whale.
609	Ladies Dream Nº 1
610	Ladies Dream Nº 2
611	Ladies Dream Nº 3
612	May Flower Nº 1
613	May Flower Nº 2
614	May Flower Nº 3
615	May Flower Nº 4
616	May Flower Nº 5
617	May Flower Nº 6
618	May Flower Nº 8
619	Kentucky Nº 1
620	Kentucky Nº 2
621	Kentucky Nº 3
622	Kentucky Nº 4
629	Exchange.
630	Bonanza
631	Silver Hill.
635	Samoa.
636	Solace.
637	Sheridan.
638	Cumberland.
639	Ramney.
640	Henry.
641	Marjorie.
642	Equinoctial.
643	John.
644	Trestle.
646	Samuel (am)
647	Maid of Erin
649	Typo Nº 2
654	Minnow.
656	Silver King Nº 1
657	Silver King Nº 2
658	Silver King Nº 3
659	Silver King Nº 4.
660	Deleware Nº 1
661	Deleware Nº 2
662	Deleware Nº 3
663	Eureka (am)
664	Spring.
665	Deleware.
666	Cumberland.
667	Lookout
668	Chance.
669	Park City.
670	Central Hill
671	Poor Man
672	Union Fraction
673	Wedge.
678	Chicago.
686	Emily.
687	Hope.
688	Alvina.
689	Conklin.
690	Arthur.
698	Emly.
699	Huron.
700	Niagara.
701	Evergreen.
702	Matchless
703	Minnesota.
704	Fraction.
705	Sunset
707	Sun Set Nº 3
708	Jennie Lind
711	Captain
711	Mollie.
711	Free Thinker
711	Illinois.
711	McCay.
711	Milbeedy.
712	Nellie.
713	Fraction.
714	Link.
715	D. S. Lode.
717	Andes.
718	Ampheon.
718	California.
718	Pinnageka.
719	Monitor.
720	Star.
720	Apostle.
720	Colbath.
720	Apostate.
721	Mount Blanc.
721	Pikes Peak.
721	Bull Run.
721	Lodi.
721	Antietam.
721	Warsaw.
721	Sitka.
721	Santiago.
721	Berlin.
721	Toulon.
721	Madrid.
721	Alianza.
722	Golden Gate.
723	Clay.
723	Cicero.
723	Webster.
723	Calhoon.
723	Delta.
723	Pearl.
723	Ravine.
723	Polygon.
723	Zebra.
724	Logan.
724	U. P. Nº 2
725	Parker.
726	Vesuvius.
728	Fraction.
728	Custer.
728	King Extn.
729	Caledonia.
730	Electric Light.
731	Gettysburg
731	Pavia
731	Bunker Hill.
731	Vernal.
731	Richmond.
731	Vicksburg.
731	New Port Nº 3
731	New Port Nº 2
731	New Port Nº 1
731	Ney.
731	Napoleon.
731	Bizaine.
731	Thiers.
731	Gambetta
731	Boulanger.
731	Waterloo.
732	Ural.
2971	Pauper.
3008	Dutchman.
3040	Uintah.
3045	Captain Pinto.
3048	Valpariaso.
3049	Index.
3050	Manhattan Nº 2
3051	Woodbine Nº 2
3055	Eldorado Nº 2
3056	Una.
3058	Park View Nº 2
3069	Starlight.
3070	Sunlight
3071	Susan B.
3074	Protection (am)
3075	Outlet.
3100	Nelson.
3115	Cain.
3116	Convention.
3117	Little Belle
3118	Laird.
3131	Freja.
3198	Kate F.
3205	Utah Central.
3230	Nabob.
3230	Aurora.
3230	Heather Bell.
3230	Mountain Daisy
3230	Silver Buck.
3230	Perserverance
3230	Camelia.
3244	Lief Eriksen
3262	Hope Nº 2
3262	Emily Nº 2
3262	Emma.
3428	Free Coinage
3436	Trilby.
3437	Notch.
3438	Queen
3439	Svengali.
3440	Zenda.

SNAKE CR'K MINING CLAIMS

Nº	Name.
39	Blue Ledge
40	Dudu.
41	Magnet.
42	Monta.
42	Neddie.
47	Mount Vernon Nº 2
47	Mount Vernon Nº 1
48	Minnesota.
54	Ivanova
55	Goffer Deposit
56	Midget.
57	Lucky Bill.
61	Kalamazoo
62	Steuben.
63	Frank.
63	Roy.
64	Henrietta (am)
65	Arthur.
67	Mabel (am)
68	Orient.
69	Occident.
70	Contact.
71	Nathan.
76	Minnesota Exth
77	Grand Deposit
78	Euclid
79	Quicksilver.
80	Kelly.
81	State of Maine.
82	Iron Clad Nº 2
83	Iron Clad.
84	Mary Ellen.
85	Little Ned (am)
86	Judge.
87	Quinn Nº 2 (am)
88	Focus.
89	[illegible] (am)
90	Forest.
91	Silver Rink.
92	McLaughlin.
93	Emily Jane Nº 1
94	Platonic.
95	Hunter.
97	Gerraty.
98	Henry Newell.
99	Lake View.
100	Broderick Due.
101	Butcher Boy.
102	Black Hawk.
103	Shields.
106	Harrison.
109	Silver Islet.
110	Gresham.
111	Alger.
112	McKinley.
113	Old Arm Chair.
114	Nip & Tuck.
115	Enterprise.
116	Knickerbocker
117	Occidental.
118	Woodpecker.
119	Oldham (am)
120	Lone Tree.
121	Home Station.
122	Red Oxyd.
123	Silver 2nd.
124	Catch All.
125	Point Junction
126	Oldham.
130	[illegible]
131	Hard Tack.
132	Cold Spring.
133	Oregon.
134	Warm Spring.
135	London.
136	Daylight.
139	Lone.
140	Bowlder.
141	King [illegible]
143	Grace.
144	Harrison.
145	Wide West Nº 1
147	Plumed Knight
148	Ogden.
149	Cliff.
150	Safe Guard.
151	Golden Head.
151	Salt Hill.
152	Bunker Lode Nº 2
153	Tic Lode Nº 2 Extn
154	Sunday.
155	Tic.
156	Bunker.
3025	Aunt Polley.
3025	Lake Side.
3025	Sea Foam Mine
3298	Monroe.
3300	Silver Star.
3301	Sultana.
3301	Sultan.
3301	Oriental.
3301	Nile.
3301	Crete.
3303	Lode Line.
3304	Potosi.
3305	Snow Slide.
3306	Pioneer Extn Nº 3
3308	Lost.
138	Great Western

AREAS IN SEC 20

Nº	Acres.
1	6.76
	6.76

AREAS IN SEC 21.

Nº	Acres.
1	2.57
2	0.84
3	4.31
4	4.27
5	0.86
6	1.58
7	3.43
8	4.89
9	0.45
10	3.73
11	0.56
	27.49 ADD.

AREAS IN SEC 27.

Nº	Acres.
1	2.04
2	12.39
3	1.12
4	0.41
5	0.61
6	3.36
7	12.79
8	2.41
9	6.06
10	7.98
11	1.47
12	13.57
13	2.05
14	1.22
15	1.53
16	2.19
17	17.42
18	7.88
19	1.23
20	15.77
21	39.32
	152.82

AREAS IN SEC 28

Nº	Acres.
1	0.47
2	1.09
3	0.76
4	0.53
5	0.51
6	1.33
7	0.86
8	1.08
9.	10.24
	16.87

AREAS IN SEC 29

Nº	Acres.
1.	0.61
2.	0.57
3	5.22
4	0.88
5	11.39
6	0.56
7	1.67
8	0.39
9	0.44
	21.73

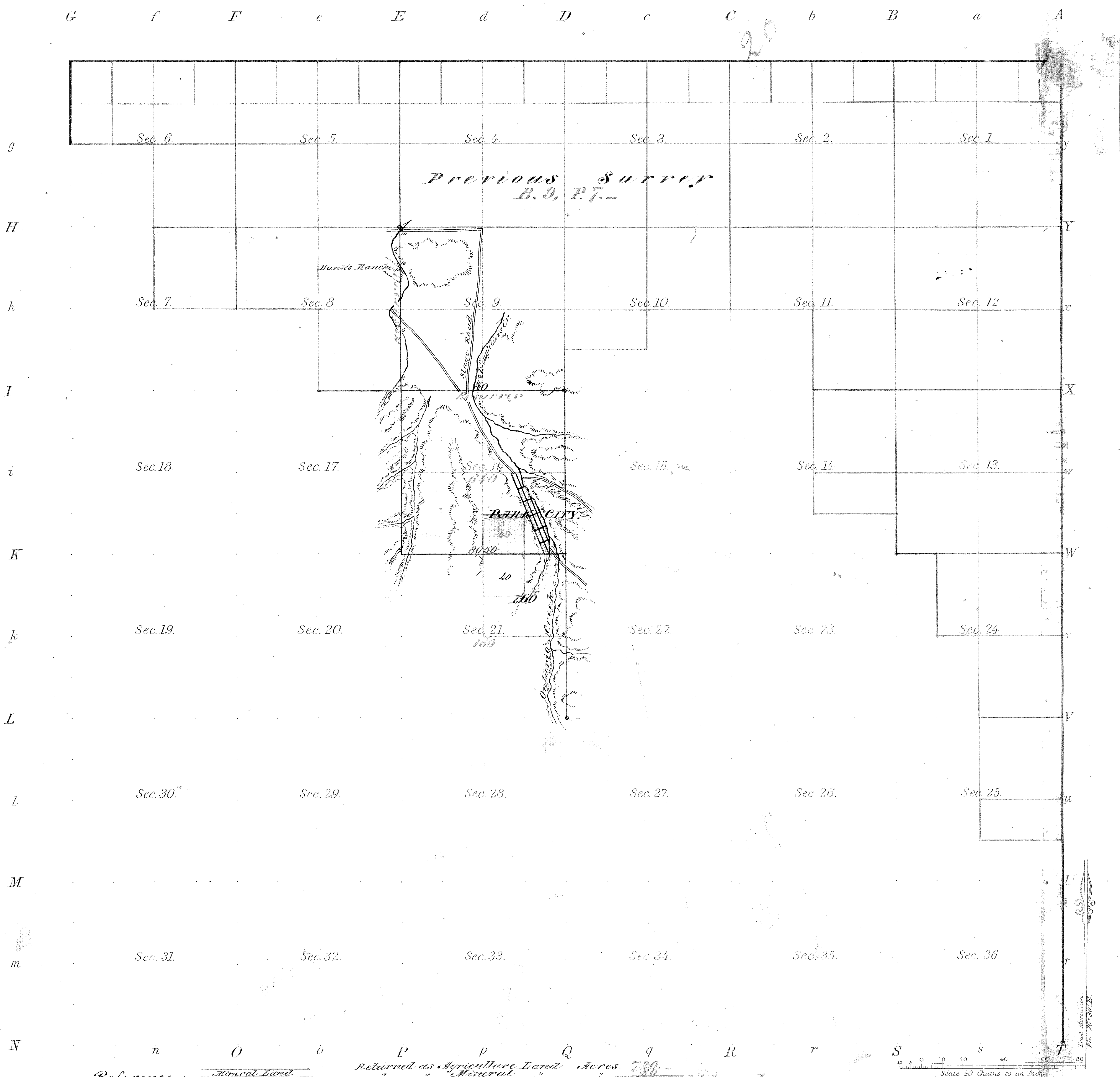
AREAS IN SEC 30

Nº	Acres.
1.	3.69
2.	1.26
3.	0.48
4	0.49
5.	17.45
6.	11.46
7.	.40
8.	16.07
9.	3.86
10.	10.67
11.	5.97
12.	8.65
13.	2.40
14.	5.36
15.	3.77
16.	25.38
17.	13.09
18.	1.82
19.	4.60
20.	3.12
21.	0.31
22.	2.79
23.	0.74
24.	0.63
25.	0.12
26.	1.07
	165.26

442 B

THE NORRIS PETERS CO., LITHO., WASHINGTON, D.C.

TOWNSHIP No. 2 SOUTH RANGE No. 4 EAST OF SALT LAKE MERIDIAN



Meanders of								
Posts	Courses	Chs. Lks.	Posts	Courses	Chs. Lks.	Posts	Courses	Chs. Lks.

Depositor	Date	Amount
Jerome V. Mason	July 24th 1876	
Certificate No. 4511.	Field Work	$ 35.00
do " 4512	Office Work	25.00
		Total $ 60.00

Reference: Mineral Land; Boundary of Former Survey

Returned as Agriculture Land Acres 720.–
" " Mineral " 80.
Total number of Acres 800 additional.

Surveys Designated	By Whom Surveyed	Date of Contract	Amount of Surveys Chs.	Lks.	When Surveyed
Township lines					
Subdivisions	Charles P. Brooks	August 1st 1876	6 00	50.	August 25th & 26th 1876

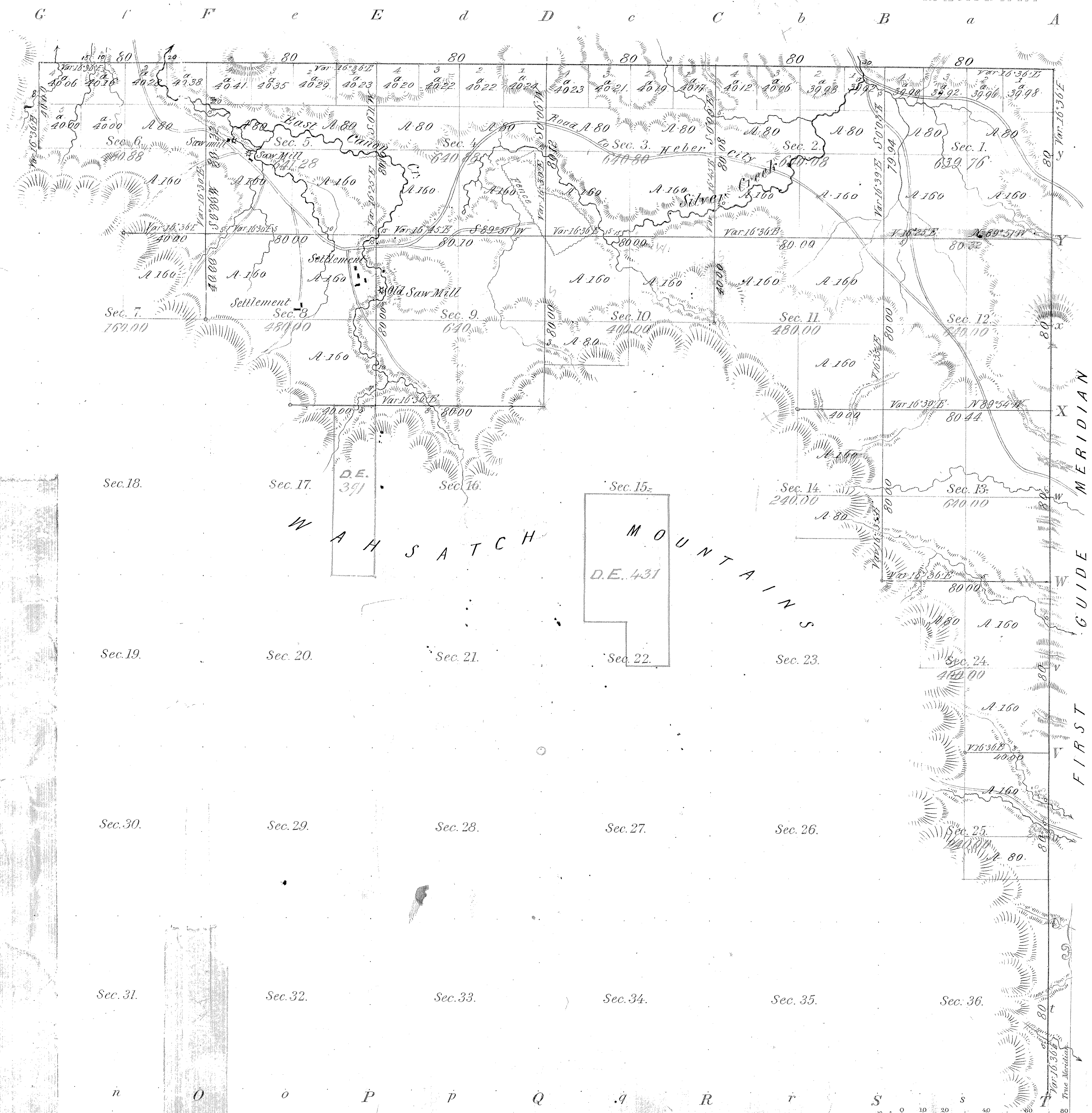
The above Map of Township No. 2 South of Range No. 4 East of the Salt Lake Meridian Utah Territory is strictly conformable to the field notes of the survey thereof on file in this Office, which have been examined and approved.

Surveyor Generals Office
Salt Lake City Utah
August 31st 1876.

Nathan Kimball
Sur. Gen.

442-A

TOWNSHIP No. 2 South RANGE No. 4 East Salt Lake MERIDIAN



Meanders of								
Posts	Courses	Chs. Lks.	Posts	Courses	Chs. Lks.	Posts	Courses	Chs. Lks.
			Desert Land Entry					
No. 391 - 160 ac. [illegible]			25.79 John A. [illegible]					
" 431 - 280 " May			25.80 Alfred B. [illegible]					

Total number of Acres. 8003.68

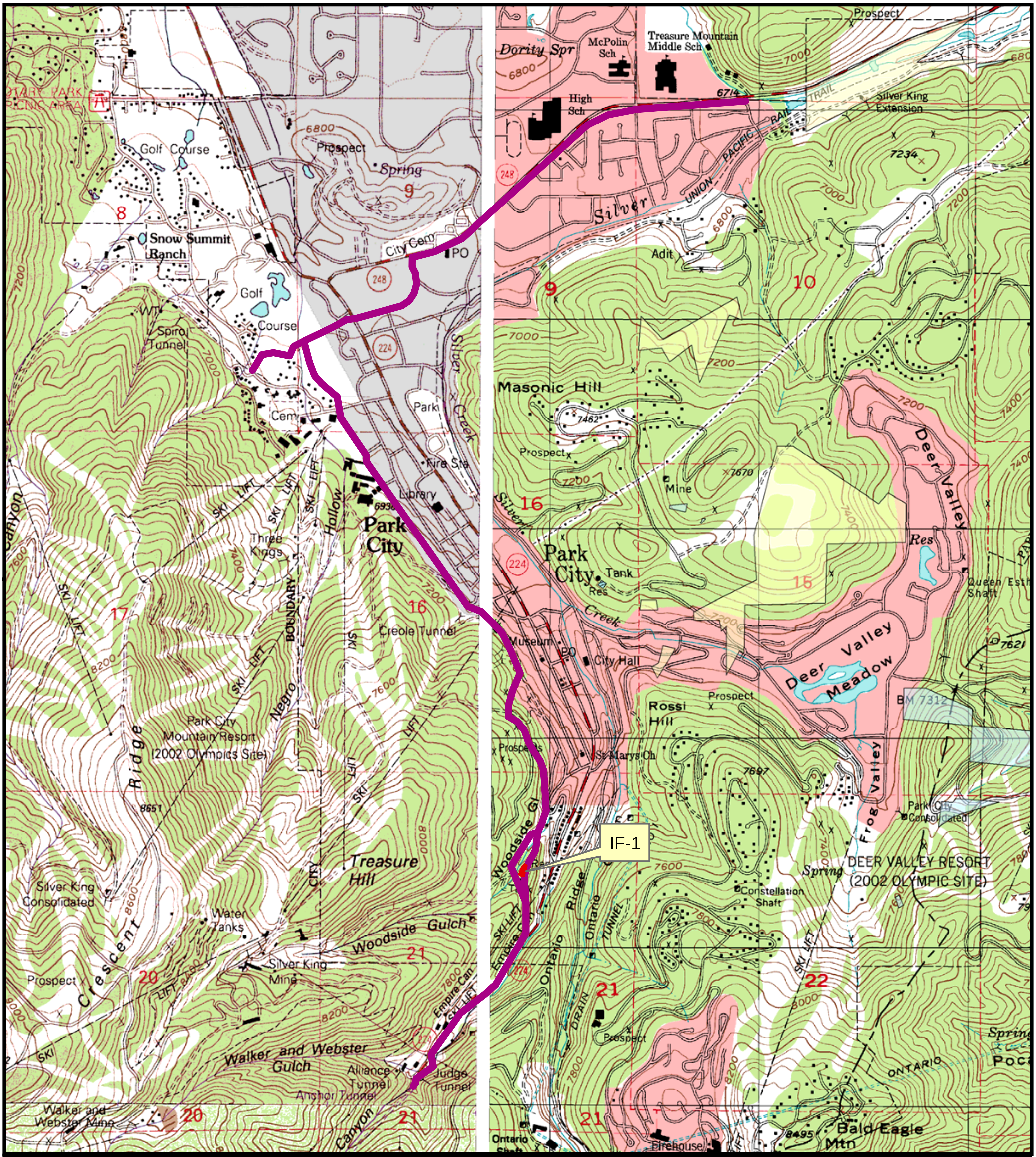
Surveys Designated	By Whom Surveyed	Date of Contract	Amount of Surveys	When Surveyed
~~First Guide Meridian~~ ~~Township lines~~	Joseph Gorlinski	May 29th 1869	M. 6. Chs. 00 Lks. 00	2nd quarter 1869
Subdivisions	" do "	" do "	20. 01 32.	do.
West Boundary	" do "	" do "	00. 40 00	3d quarter 1869

The above Map of Township No. 2 South of Range No. 4 East Salt Lake Meridian Utah Territory is strictly conformable to the field notes of the survey thereof on file in this Office, which have been examined and approved.

Surveyor Generals Office
Salt Lake City Utah
December 15th 1869

C. C. Clements
Surr. Genl.

Appendix B
Project and Isolated Find Location Map



Prospect
Dority Spr
McPolin Sch
Treasure Mountain Middle Sch
High Sch
6714
TRAIL
Silver King Extension
7234
Golf Course
Prospect
Spring
Snow Summit Ranch
City Cem
PO
Silver
UNION PACIFIC RAIL
Adit
10
Golf Course
Spiro Tunnel
Masonic Hill
7462
Park
Creek
Prospect
Mine
7670
Fire Sta
Library
Deer Valley
16
Park City
SKI LIFT
Three Kings
Hollow
BOUNDARY
Park City
Tank
Res
Res
Queen Esther Shaft
15
17
Creole Tunnel
Museum
PO
City Hall
7621
Deer Valley Meadow
Ridge
Negro
Park City Mountain Resort (2002 Olympics Site)
Rossi Hill
Prospect
BM 7312
Prospects
St Marys Ch
7697
Park City Consolidated
8651
IF-1
Woodside Gl
Treasure Hill
Frog Valley
DEER VALLEY RESORT (2002 OLYMPIC SITE)
Spring
Silver King Consolidated
Constellation Shaft
Water Tanks
Ridge
Ontario
TUNNEL
Woodside Gulch
21
Silver King Mine
Crescent
Prospect
20
Empire Can
Ontario
DRAIN
22
21
Prospect
Walker and Webster Gulch
Alliance Tunnel
Judge Tunnel
Anchor Tunnel
ONTARIO
Spring
Walker and Webster Mine
20
21
Canyon
21
Ontario Shaft
Firehouse
8495
Bald Eagle Mtn

Legend

- Project Alternative
- Isolated Find
- BLM
- SITLA
- Private

Appendix B. Project and Isolated Find Location Map

BIGHORN ARCHAEOLOGICAL CONSULTANTS, LLC

1:24,000

0 — 1 mi

0 — 1 km

USGS 7.5' Series Quads: Heber City, Brighton, Park City East, Park City West, Utah

Summit County
T2S, R4E

N

APPENDIX F

PCMC Traffic Control Requirements

SECTION 500

STREET CONSTRUCTION AND RELATED WORK

April
2007
DeHaan/Anderson

CITY ENGINEER'S OFFICE

To schedule an appointment or an inspection

TWO WORKING DAYS IN ADVANCE

(435) 615-5077

Notes:

SECTION 500

STREET CONSTRUCTION AND RELATED WORK

500.1 General: All pavement and street construction within Park City, including pavement patches, on City right-of-ways, or City owned property, and for private projects as determined by City ordinances, shall be constructed in accordance with the requirements of these Specifications. Because of the severity and sudden onset of winter in Park City, all asphalt placement and all street patching and construction shall be completed by 5:00 p.m. on October 15, unless approved otherwise by Public Works Director.

500.2 Approved Plans: Pavement and street construction shall be performed in accordance with the Contract Documents for the work, prepared under the direction of a Professional Engineer licensed in Utah and approved by the Park City Engineer. Construction shall conform to the Approved Plans, these Specifications, and the Standard Drawings included in these Specifications.

500.3 Licenses and Permits Required: All paving and street construction, including City right-of-ways shall be performed by a Contractor licensed and bonded in Utah. A permit shall be secured by the Contractor from the Building Department and approved by the City Engineer at least 48 hours before initiating construction. Park City's Inspector shall be notified by the Contractor at least 3 working days before the planned construction is to commence and also before starting whenever construction is delayed for any reason. The Chief of Police and the Park City Fire District must be notified 48 hours in advance of intended closure of any public way.

500.4 Inspection: All work shall be inspected by a City authorized Inspector who shall have the authority to halt construction. Whenever any portion of these Specifications and Contract Documents are violated, the City Manager or designee, by written notice, may order that portion of construction which is in violation of these Specifications and Contract Documents to cease until violation is corrected. A copy of the notice may be filed with the Contractor's license application for future review. If deficiencies are not corrected, performance shall be required of the Contractor's Surety.

500.5 Contractor's Site Examination: Prior to starting work, the Contractor shall visit the site to determine existing conditions, nature of materials to be encountered and all other pertinent factors concerning or affecting the work to be performed. The Contractor shall familiarize himself with utilities and other existing improvements which occur in or near the designated work areas. If the work requires the temporary removal or relocation of existing items such as street signs, fences, mail boxes, etc., the location of each item shall be accurately determined and recorded on the Contractor's field drawings. Following completion of work in the area the items shall be replaced to their original locations and condition. The Contractor shall assume full responsibility for the protection of such items during removal, replacement and/or storage.

500.6 Supervision by the Contractor: Before starting the work, the Contractor shall designate, in writing, a representative who shall have complete authority to act for him. An alternate representative may also be designated. The representative or alternate shall be present at the work site whenever work is in progress. Any order or communication given to this representative shall be deemed delivered to the Contractor. A joint venture shall designate only one representative and alternate. In the absence of the Contractor or his designated representative, necessary directions or communications relevant to the work may be given by the City's representative to the superintendent or foreman having charge of the specific work to which the order applies. Such order(s) shall be complied with promptly and referred to the Contractor or his designated representative.

500.7 Traffic Control: The Contractor shall direct all construction activities so as to minimize obstruction of vehicular or pedestrian traffic and to prevent damage to completed work. In this regard, the Contractor shall keep the proper City Authorities continuously informed as to the location(s) of this operations. *No City street or road shall be closed to vehicular traffic without the prior permission of the City and not until after the affected emergency response authorities have been notified.* Contact the City Engineer's office to apply for street closure authorization.

In order that the effect to both the flow of traffic and damage to the new work is minimized, the Contractor shall at all times provide approved barricades, lights, flag men and other traffic control devices approved by the City Engineer, specified on the drawings or specifications or as may be required by law. All barricades needed overnight shall have flashing amber lights.

The Contractor shall submit his traffic control plan to the City Engineer for approval, prior to the start of work. All necessary personnel and/or devices, including any additional as directed by the City Engineer, shall be provided solely at the expense of the Contractor.

500.8 Protection of Existing Improvements:

500.8.01 Surface Improvements: The Contractor shall be responsible for the protection of existing surface improvements as directed elsewhere in the various applicable sections of these Specifications and Contract Documents, and any damage resulting from his operations shall be his sole responsibility.

When required for construction approval, the limits of the disturbance area shall be fenced with a 6-foot chain link fence conforming to UDOT Specifications, or approved equal.

500.8.02 Subsurface Improvements:

500.8.02A General: Utilities of record will be shown on the Approved Plans insofar as it is possible to do so. Failure of the plans to show the existence of subsurface objects or installations shall not relieve the Contractor from his responsibility to make an independent field check nor relieve him from all liability for damages resulting from his operations unless otherwise provided in the Special Conditions or by exceptions hereinafter mentioned.

It shall be the responsibility of the Contractor to give proper written notification to the agencies that have utilities in place and to cooperate with these agencies in the protection and relocation of the various underground installations. These agencies will give assistance in the location of various utilities, but this shall not relieve the Contractor from responsibility for any damage incurred, except in cases where the installations are not located as closely as is normally possible with normal locator equipment. In such case, the Contractor will not be liable if he has proceeded with due caution.

Where sewer services are damaged through no fault of the Contractor, they shall be repaired and payment will be made therefore in accordance with the unit contract price, or by force account as the City Engineer may determine.

500.8.02B Private Utilities: Utilities other than those owned and operated by the City are in streets pursuant to franchises or to rights claimed under the laws of the U.S.A. or the State of Utah, and therefore, the respective utility agencies are responsible for all adjustments and relocations of their facilities. These agencies will locate their facilities for the Contractor and assist him in their protection. The Contractor shall coordinate his work with that of the affected agencies and shall protect their utilities from damage to the extent possible.

The Contractor shall be liable for all damage to private utilities resulting from his operations, and shall hold the City harmless.

500.8.02C Water Mains and Appurtenances: The Contractor shall be responsible for any damage to water mains and water facilities caused by his operations, for the cost of lost water, and also for the cost of City manpower, materials, and equipment costs as determined by the Public Works Director, except under the following conditions:

1. he has not excavated below or beyond the required excavation lines and,
2. he has given proper and timely notice of his work plans, and
3. he has used reasonable care and has cooperated in minimizing the damages.

Any damage to water gates, hydrants, valve chambers, and other surface appurtenances which results from the Contractor's operation shall be his sole responsibility.

500.9 Use of Existing Streets: Off-highway earthmoving equipment, tracked equipment and haul vehicles with loads in excess of legal limits will not be allowed to travel upon, haul on or across any existing streets not being improved under or otherwise included in the Contract.

500.10 Use of Explosives: Blasting will not be permitted in any case without specific authority of the City, and then only under such restrictions as may be required by the proper authorities. Explosives shall be handled and used in strict compliance with the "Utah Occupation Safety and Health; Rules and Regulations; General Standards" of the Utah State Industrial Commission.

When the use of explosives is necessary for the execution of the work, the Contractor shall be responsible for any and all damage or injury resulting from the use of explosives.

The Contractor shall notify the Park City Police Department, the Park City Fire District, and each public utility company having structures in proximity to the site of the work of his intention to use explosives and such notice shall be given sufficiently in advance to enable companies to take such steps as they may deem necessary to protect their property from injury.

Blasting shall be completed in the vicinity of new structures before construction on such structures is undertaken. All explosives shall be stored in a secure manner and placed in compliance with local laws and ordinances and all such storage places shall be clearly marked "Danger--Explosives". No explosive shall be left in an unprotected manner along or adjacent to any existing highway or public place.

500.11 Prime and Tack Oil Application: The prime and tack oil application rate will be allowed to vary depending on air temperature, soil moisture, and soil type from the rates specified herein down to 0.05 gallons per square yard. The determination will be made by the Park City Inspector as specific conditions are verified.

500.12 Import Fill Material: The Contractor shall obtain import fill material from one source only for each classification of fill material used on each project. The material from each source must meet the specifications for the classification and be approved by the City Engineer prior to delivery on site. Submittals to the City Engineer must be made a minimum of five (5) working days prior to the intended use of the material.

500.13 City Right-Of-Way Grades Behind Gutter/Edge of Asphalt : (REFER TO STD. DWG. 800-B) When Landscaping or excavating on City property or the City Right-Of-Way, the following conditions shall apply:
1. Within the outside ten (10) feet of the City Right-Of-Way, the final physical grade elevation shall be within the limits of the areas shown between the dashed lines in Standard Drawing 800-B, Right-Of-Way Grading Section. The change in grade within the first five (5) feet behind the back of curb (BOC), or edge of asphalt (if there is no curb or gutter), shall not exceed six (6) inches plus or minus from the BOC grade elevation. The change in grade between five (5) feet and ten (10) feet behind the BOC, or edge of asphalt (if there is no curb or gutter), shall not exceed three (3) feet plus or minus from the BOC grade elevation.

2. Any landscape materials used in the outside ten (10) feet of the City Right-Of-Way: rock, timber, etc. shall physically fit within the limits of the areas shown between the dashed lines in Standard Drawing 800-B, Right-Of-Way Grading Section.

3. Approval of the City Engineer or the Director of Public Works is required prior to doing work on City Property. A permit may be required. Contact the City Engineer's Office for Permit requirements and/or Approval.

APPENDIX G

PCMC Noise Ordinance & Construction Mitigation Plan

PARK CITY MUNICIPAL CODE
TABLE OF CONTENTS
TITLE 6 - HEALTH, NUISANCE ABATEMENT, NOISE

TITLE 6 - HEALTH, NUISANCE ABATEMENT, NOISE

PARK CITY MUNICIPAL CODE
TABLE OF CONTENTS
TITLE 6 - HEALTH, NUISANCE ABATEMENT, NOISE

TITLE 6 - HEALTH, NUISANCE ABATEMENT, NOISE

CHAPTER 1 - ABATEMENT OF GARBAGE AND OTHER DELETERIOUS MATERIAL

6- 1- 1. DISPOSAL REQUIRED.

Every owner or occupant of any structure, lot or property within Park City shall have the obligation to properly dispose of and keep those premises free from refuse, including garbage, trash and debris, junked automobiles, flammable materials, as defined in the Uniform Fire Code, noxious weeds, or any deleterious or unsightly material, objects or structures.

6- 1- 2. FIRE MARSHALL.

It shall be the duty of the City Fire Marshall or his/her designee to act as City inspector for the purpose of enforcing this ordinance.

6- 1- 3. NOTICE TO PROPERTY OWNERS.

Under the authority of U.C.A. Section 10-11-2 and this title, it shall be the duty of the City inspector to make careful examination and investigation of the City to determine which properties, if any, are not in compliance with Section 6-1-1 of this title. The inspector shall ascertain the names of the owners and descriptions of properties not in compliance with Section 6-1-1 of this title and serve notice either personally or by mail, postage prepaid, to the owner and occupant at their last known mailing address as disclosed by the records of the County Assessor for owners and the records of the water department or the address assigned to the property for occupants. Notice shall also be posted upon the property. The notice shall require the owner or occupant to eradicate, remove, destroy or to abate the condition within such a time as designated by the city inspector, but in no case less than ten (10) days from the date of service of such notice. The inspector shall make proof of service of such notice under oath and file the same with the County Treasurer. One notice shall be deemed sufficient on any lot or parcel of property for the entire season of weed growth for that year.

6- 1- 3. NEGLECT OF PROPERTY OWNERS.

If any owner or occupant of lands described in such notice shall fail or neglect to eradicate, remove, destroy or abate such refuse, garbage, trash, debris, junked automobiles, flammable materials, noxious

weeds, deleterious or unsightly material, objects or structures in accordance with such notice the owner or occupant shall be guilty of a Class B misdemeanor, and the inspector may, at the expense of the City, employ necessary assistance and cause such weeds, garbage, refuse or deleterious objects to be removed or destroyed. He shall prepare an itemized statement of all expenses incurred in the removal and destruction of same, and shall mail a copy thereof to the owner, demanding payment within twenty (20) days of the date of the mailing. Such notice shall be deemed delivered when mailed by registered mail addressed to the property owners' and tenants' last known address and posted on the property. In the event the owner fails to make payment of the amount set forth in the statement to the City Treasurer within twenty (20) days, the inspector, on behalf of the City, may cause suit to be brought in an appropriate court of law or may refer the matter to the Summit County Treasurer as provided in this ordinance. In the event collection of costs are pursued through the courts, the City may execute on any judgment in the manner provided by law. In the event that the City inspector elects to refer the matter to the County Treasurer for inclusion in the tax notice of the property owner, the City inspector shall make, in triplicate, an itemized statement of all expense incurred in the removal and destruction of the same, and shall deliver the three (3) copies of the statement to the County Treasurer together with an affidavit stating the owner and occupant were served notice to eradicate, abate or destroy and remove the weeds, garbage, refuse, and objects within ten (10) days after completion of the work of removing such weeds, garbage, refuse, objects or structures.

6- 1- 5. COSTS OF REMOVAL INCLUDED IN TAX NOTICE.

Upon receipt of the itemized statement of the cost of destroying, abating or removing such weeds, refuse, garbage, objects or structures, the County Treasurer shall forthwith mail one copy to the owner of the land from which the same were removed or abated, together with a notice stating that objections to the whole or any part of the statement so filed may be made, in writing, within thirty (30) days to the Board of County Commissioners. If objections to any statement are filed with the County Commissioners, the Commissioners shall set a date for hearing, giving notice thereof, and upon the hearing, fix and determine the actual cost of removing or abating the weeds, garbage, refuse or unsightly or deleterious objects or structures, and report their findings to the County Treasurer. If no objections to the items of the account so filed are made with thirty (30) days of the date of mailing such itemized statement, the County Treasurer shall enter the amount of such statement on the assessment roles of the County in the column prepared for that purpose, and likewise within ten (10) days from the date of the action of the Board of County Commissioners upon objections filed shall enter in the prepared column of the tax rolls the amount found by the Board of County Commissioners as the cost of abating or removing and destroying the said weeds, refuse, garbage or unsightly and deleterious objects or structures. If current tax notices have been mailed, said taxes may be carried over on the rolls to the following

year. After entry by the County Treasurer of the costs of abating or removing weeds, garbage, refuse, or unsightly and deleterious objects or structure, the amount so entered shall have the force and effect of a valid judgment of the District Court, and shall be a lien upon the lands where the weeds, refuse, garbage or unsightly and deleterious objects or structures were removed and destroyed or abated and shall be collected by the County Treasurer at the time of payment of general taxes. Upon payment thereof, receipt shall be acknowledged upon the general tax received issued by the Treasurer.

6- 1- 6. USE OF PUBLIC TRASH RECEPTACLES.

Public trash receptacles are for the occasional non-commercial use of the general public and no individual or business entity may deposit the refuse from its commercial activity in a public trash receptacle in lieu of regular garbage disposal.

6- 1- 7. LITTERING PROHIBITED.

No waste or other material including soils, rocks, and earth of any kind may be thrown, permitted to be deposited or placed in an open container in such manner that it may blow upon or be scattered upon any sidewalk, street, alley, or public passageway or upon any private property.

6- 1- 8. HAULING OF REFUSE TO BE IN CLOSED CONTAINER OR COVERED VEHICLE.

All refuse hauled or conveyed within the city limits of the City shall be hauled in a closed container, or if being hauled or conveyed in a vehicle, shall be covered or closed in so that the contents cannot fall or be blown from the container or vehicle used for such hauling or conveying.

6- 1- 9. CITY APPROVAL OF DUMPSTER SITES.

Written approval of the site by the Community Development Director must be received prior to locating any dumpster in or on City rights-of-way or properties.

6- 1-10. USE OF PRIVATE DUMPSTERS OR TRASH RECEPTACLES.

Private dumpsters or trash receptacles are for the exclusive use of the lessee or owner and no individual or business or commercial entity may deposit more than one cubic foot ($1\ ft.^3$) of solid waster or refuse into a private dumpster or trash receptacle without the prior written consent of the lessee or owner.

CHAPTER 2 - BURGLARY AND ROBBERY ALARMS

6-2-1. DEFINITIONS.

All words and phrases used in this article shall have the following meanings unless a different meaning clearly appears from the context:

(A) **ALARM**. Any telephonic or electronic device used to notify the police about acts of a crime or emergency.

(B) **ALARM BUSINESS**. The business by any individual, partnership, corporation, or other entity selling, leasing, maintaining, servicing, repairing, altering, replacing, moving, or installing any Alarm system or causing to be sold, leased, maintained, serviced, repaired, altered, replaced, moved, or installed any Alarm system in or on any building structure, or facility.

(C) **ALARM USER**. The person, firm, partnership, association, corporation, company, or organization of any kind in possession and control of any building, structure or part thereof, or facility wherein an Alarm system is maintained.

(D) **AUTOMATIC DIALING DEVICE**. A device, which is interconnected to a telephone line and is programmed to select a predetermined telephone number and transmit by voice message or code signal an emergency message indicating a need for emergency response.

(E) **CHIEF OF POLICE**. The Director of the Park City Police Department or his/her authorized and designated representative.

(F) **DIRECT ACCESS ALARM SYSTEM**. A system, which has remote access to the automatic monitoring devices installed in the City dispatch center.

(G) **FALSE ALARM**. An alarm signal, eliciting a response by police officials when a situation requiring a police response does not in fact exist, but does not include an Alarm signal caused by violent conditions of nature or other extraordinary circumstances not reasonable subject to control by the Alarm Business operator or Alarm User.

6-2-2. NOTIFICATION REQUIRED.

It shall be unlawful for a person to maintain an Alarm on any premises without first providing the Park City Police Department a list of persons with telephone numbers, who are authorized and responsible to enter the Alarm User's premises and deactivate the Alarm. It is unlawful for any person named on such list, who has been personally contacted by police, to fail to appear within the time designated by police and inactivate the Alarm for which he is responsible.

6-2-3. FALSE ALARMS.

(A) **FALSE ALARMS PROHIBITED**. It shall be unlawful for a person to cause a False Alarm deliberately or through inadvertence or neglect.

(B) **MISUSE OR TEMPERING WITH AN ALARM SYSTEM**. It shall be unlawful for any person or Alarm User to misuse, tamper with, alter, or obstruct any Alarm System, whether or not such misuse, tampering, alteration, or obstruction causes the Alarm to signal entry into the premises, unless such person is an authorized technician duly authorized by the Alarm User to perform maintenance or testing on such Alarm, and provided that such technician has notified the Park City Police Department, Summit County Sheriff's Department, and the Alarm User of such maintenance.

6-2-4. CASH DEPOSIT TO BE POSTED.

It shall be unlawful for any person or corporation to maintain an Alarm System on any premises unless there shall have been posted with the Park City Municipal Corporation a cash deposit in the amount of One Hundred Dollars ($100.00), portions of which are to be forfeited upon the giving of False Alarms as hereinafter provided.

6-2-5. PRIVATE SECURITY RESPONSE.

(A) If an Alarm is answered or monitored by a private security firm or other such individual not associated with publicly-funded law enforcement, and the Alarm User or monitoring agency does not wish response by the Park City Police Department until such Alarm has been verified by the Alarm User or monitoring agency, then the deposit pursuant to Section 6-2-4 of this Chapter shall not apply, provided, however, that the Park City Police Department and the Summit County dispatch have been notified in writing that no police response is desired unless specifically requested by an alarm user, responsible party for the alarm, or private security firm.

(B) All Alarms, whether monitored and responded to by the Park City Police Department, private security firm, or other such person or agency responsible for the Alarm, must be registered with the Park City Police Department pursuant to Section 6-2-2 of this Chapter.

6-2-6. PENALTY.

For a police response to a False Alarm, the Police Chief shall charge and collect the following fees from the Alarm User, which fees shall be initially deducted from the deposit posted with Park City Municipal Corporation:

(A) **PENALTY FEES FIRST RESPONSE**. For response to premises at which no other False Alarm has occurred within the preceding six (6) month period, hereinafter referred to as "first response," no fee shall be charged and no deduction from the deposit shall occur. The police responding to the "first response" Alarm shall provide written notification to the Alarm User that subsequent responses to False Alarms will cause deductions from the posted deposit.

(B) **PENALTY FEES SUBSEQUENT RESPONSES**. For a second response to the same premises within six (6) months after such "first response," and for all subsequent responses, The Police Chief shall charge Twenty-Five Dollars ($25.00) and deduct each such charge from the posted deposit. In the event such deposit becomes exhausted, the Alarm shall be disconnected and/or responses to such Alarm shall be discontinued by emergency services personnel until such time as all fees are paid and a new deposit in the amount of One Hundred Dollars ($100.00) is posted with the Park City Police Department and the Alarm has been inspected by a qualified technician.

(C) **SENTENCING**. Any person convicted of a violation of, or failure to comply with, any of the provisions of this Chapter shall be punishable in accordance with Section 8-1-19 through 8-1-33 of the Municipal Code of Park City.

(D) **WILLFUL FALSE ALARM**. Any person, including Alarm User, who knowingly and deliberately activates an Alarm System when no emergency situation exists at the premises, shall be guilty of a Class B misdemeanor and be subject to a fine of not more than One Thousand Dollars ($1,000.00), imprisonment for six (6) months, or both.

6-2-7. DIRECT ACCESS ALARM SYSTEMS.

Direct Access Alarm Systems are allowed under the following terms and conditions:

(A) **EQUIPMENT**. Any direct access equipment shall be approved in advance by the Chief of Police for compatibility with existing equipment in the dispatch center, and to eliminate duplicate or overlapping equipment. Automatic telephone tape dialing devices, which dial the emergency phone number and give a taped message will not be allowed. Some kind of alarm transmitting device that provides the information from the Alarm to the City monitor is required.

(B) **INSTALLATION**. Installation will be to Park City Police Department specifications, and all the costs of installation will be on the private alarm company making the installation. The City does not insure private alarm monitoring devices. Direct Access Alarm Systems equipment is installed at the sole risk of the owner.

(C) **CHARGES**. In lieu of the One Hundred Dollar ($100.00) Deposit charged for alarms that are not installed as a Direct Access Alarm System, there shall be an initial charge of One Hundred Dollars ($100.00) per alarm connected through a Direct Access Alarm System device for the installation of the Alarm. For purposes of this section, each remote Alarm installation location is a separate Alarm for which $100.00 is charged, whether that system monitors burglary, fire, mechanical failure or other functions at that location. For each subsequent year, the Direct Access Alarm System user shall pay a fee of Fifty Dollars ($50.00) per year or part thereof for each Alarm installation location.

(D) **ALARM SERVICE CONTRACT**. Each Alarm company making a Direct Access Alarm System connection to the dispatch center shall sign a contract with the City setting forth the nature of its expected response to the Alarm, the protocol of notifying the Alarm company and the conditions under which the Park City Police Department will make the initial response to the Alarm, penalties for repeated False Alarms (which will include loss of that location's Direct Access Alarm System privilege, or in the case of a company that has an unusually large number of False Alarms, the loss of that company's Direct Access Alarm System privilege), insurance of Alarm equipment and response personnel, and similar mechanical items that deal with the relationship between the City as the dispatch monitoring center and the Park City Police Department as the primary law enforcement agency in the City, and the Alarm company and its customers as the persons requesting emergency service through automatic devices.

(E) **ELIGIBILITY**. The City will permit only private security firms which are licensed by the state of Utah, and which have Park City business licenses, to connect to the Direct Access Alarm System devices. Each private security system must agree to maintain locally-based twenty-four (24) hour a day response personnel Private security companies not meeting these standards will not be permitted to connect to the City dispatch by Direct Access Alarm System devices. If a private company that was in compliance at the time of connection is later found not to comply, the Direct Access Alarm System privilege will be terminated by the City.

CHAPTER 3 - NOISE

6- 3- 1. DEFINITIONS.

For purposes of these regulations, unless otherwise defined in other sections of these regulations, the following terms, phrases, and words shall have the meaning herein given:

(A) **CONTINUOUS SOUND**. Any sound that exists, essentially without interruption, for a period of ten minutes or more.

(B) **CYCLICALLY VARYING NOISE**. Any sound that varies in sound level so that the same level is obtained repetitively at reasonable uniform levels of time.

(C) **DEVICE**. Any mechanism that is intended to produce, or that actually produces noise when operated or handled.

(D) **DYNAMIC BRAKING DEVICE**. A device used primarily on trucks for the conversion of the engine from an internal combustion engine to an air compressor for the purpose of braking without the use of wheel brakes, commonly referred to as "Jacob's Brake" or "Jake Brake".

(E) **EMERGENCY**. A situation or occurrence, which in the opinion of the City Manager, Chief of Police, Chief Building Official, or City Engineer, presents an imminent threat to the health, safety or welfare of any person, place or property.

(F) **EMERGENCY WORK**. Work required to restore property to a safe condition following a public calamity or to protect persons or property from an imminent exposure to danger.

(G) **EMERGENCY VEHICLE**. A motor vehicle used in response to a public calamity or to protect persons or property from an imminent exposure to danger.

(H) **IMPULSIVE NOISE**. A noise containing excursions usually less than one second.

(I) **MOTOR VEHICLE**. Any vehicle that is self-propelled by mechanical power, including, but not limited to, passenger cars, trucks, truck-trailers, semi-trailers, campers, motorcycles, mini-bikes, go-carts, snowmobiles, and racing vehicles.

(J) **MUFFLER**. An apparatus consisting of a series of chambers or baffle plates designated to transmit gases while reducing sound.

(K) **NOISE DISTURBANCE**. Any sound that annoys or disturbs a reasonable person(s) with normal sensitivities or that injures or endangers the comfort, repose, health, hearing, peace, or safety of another person(s).

(L) **NOISE**. Any sound that is unwanted and causes or tends to cause an adverse psychological or physiological effect on human beings.

(M) **PLAINLY AUDIBLE NOISE**. Any noise for which the information content of that noise is unambiguously transferred to the listener, including, but not limited to the understanding of spoken speech,

comprehension of whether a voice is raised or normal, or comprehension of musical rhythms.

(N) **PROPERTY BOUNDARY**. An imaginary line at the ground surface, and its vertical extension that separates the real property owned by one person from that owned by another person.

(O) **SOUND**. A temporal and spatial oscillation in pressure, or other physical quantity with interval forces that cause compression or rarefaction of the medium, and that propagates at finite speed to distant points.

(P) **STATIONARY NOISE SOURCE**. Any device, fixed or movable, that is located or used on property other than a public right-of-way.

6- 3- 2. PURPOSE.

These regulations establish minimum standards to:

(A) Reduce the making and creation of excessive, unnecessary, or unusually loud noises within the limits of Park City, Utah;

(B) Prevent the making, creation, or maintenance of such excessive, unnecessary, or unusually loud noises that are prolonged, unusual, or unreasonable in their time, place, or use, that affect and are a detriment to public health, comfort, convenience, safety, or welfare of the residents of the City; and

(C) Secure and promote the public health, comfort, convenience, safety, welfare and the peace and quiet of the residents of the City.

6- 3- 3. JURISDICTION.

All noise control in this Chapter shall be subject to the direction and control of the Police Department, Building Department and City Manager.

6- 3- 4. POWERS AND DUTIES.

The Police Department and Building Department shall be responsible for the administration of these rules and regulations and any other powers vested in it by law and shall make inspections of any premises and issue orders as necessary to effect the purposes of these regulations, and do any and all acts permitted by law that are necessary for the successful enforcement of these regulations.

6- 3- 5. SCOPE.

It shall be unlawful for any person not to comply with any rule or regulation promulgated by this Chapter, unless expressly waived by these rules and regulations.

6- 3- 6. EMERGENCY ORDERS.

Whenever the Chief of Police, Building Official, City Manager or their official designees finds that an emergency exists requiring immediate action to protect the public health, safety, or well-being of the public, one or all of the following actions may be taken:

(A) **PUBLIC CALAMITY**. In time of a public calamity or disaster, emergency suspension of these rules and regulations

may be ordered for the duration of seventy-two (72) hours, at which time the incident will be assessed and further suspension of these rules ended or extended.

(B) **APPROVE APPLICATION FOR EXEMPTION FOR EMERGENCY REASONS**. An individual may apply for emergency exemption to these rules and regulations based on good and reasonable cause due to emergency circumstances. See definitions.

6- 3- 7. GENERAL PROHIBITION OF NOISE.

It shall be unlawful for any person to produce, continue, or cause to be produced or continued, any noise disturbance within the limits of Park City as defined in this Chapter.

6- 3- 8. SPECIFIC NOISE PROHIBITIONS.

The following acts are declared to be in violation of these rules and regulations:

(A) **HORNS AND SIGNALING DEVICES**. The sounding of any horn or signaling device on any truck, automobile, motorcycle, emergency vehicle, or other within the City, except as a danger warning signal as provided in the Vehicle Code of the state of Utah.

(B) **RADIOS, TELEVISION SETS, TAPE PLAYERS, COMPACT DISC PLAYERS, MUSICAL INSTRUMENTS, AND SIMILAR DEVICES**. Using, operating, or permitting, the use or operation of any radio receiving set, musical instrument, television, phonograph, drum, or other machine or device for the production or reproduction of sound:

(1) between the hours of 10 p.m. and 7 a.m. in a way that is plainly audible beyond the property boundary of the source; or

(2) on public property, public rights-of-way, or private property at any time so as to be plainly audible fifty feet (50') (15.25 meters) from the device. Permits to exceed the limits of this section may be issued for special events on public property by the Chief of Police, Building Official or City Manager upon approval from the agency operating the public property.

(C) **PUBLIC LOUDSPEAKERS**. The use or operation of a loudspeaker or sound amplifying equipment in a fixed or movable position or mounted upon any sound vehicle in or upon any street, alley, sidewalk, park, place, or public or private property for the purpose of commercial advertising, giving instructions, directions, talks, addresses, lectures, or transmission of music to any persons or assemblages of persons in violation of Section 6-3-9, or cause a noise disturbance, unless a permit is first obtained as provided by Section 6-3-11 or approval is granted in a master festival license.

(D) **HAWKERS AND PEDDLERS**. Selling anything by outcry within any area of the City in such a manner as to violate Section 6-3-9. It shall be unlawful for any person to solicit from any motor vehicle.

(E) **ANIMALS**. Owning, keeping, possessing, or harboring any animal or animals that, by frequent or habitual noise making, violates Section 6-3-9. The provision of this section shall apply to all private and public facilities, including any animal facilities that hold or treat animals.

(F) **LOADING OPERATION**. Loading, unloading, opening, or otherwise handling boxes, crates, containers, garbage containers, or other objects between the hours of 10 p.m. and 7 a.m.

(G) **CONSTRUCTION WORK**. In the Historic Residential (HR-1), Historic Transitional Overlay (HTO), Residential Development (RD), Residential Development-Medium Density (RDM), Residential (R-1), Residential-medium Density (RM), Recreation Open Space (ROS), Estate (E), Historic Residential Development Low-Density (HR-L), Single Family (SF), Single Family Nightly Rental (SF-N), Historic Residential Low Intensity Commercial Overlay Zone (HR-2), and Regional Commercial Overlay (RCO) Districts; it shall be unlawful for any person to perform or cause to be performed, any construction work on any construction site under his control or at which he is employed between the hours of 10 p.m. and 7 a.m. of the following day, or before 9 a.m. on Sundays. In all other zones, it shall be unlawful to perform or cause to be performed, construction work between the hours of 10 p.m. and 6 a.m. of the following day. The Building Official or City Engineer may authorize extended hours for construction operations or procedures which, by their nature, require continuous operation, or modify or waive the hours of work for or on projects in generally isolated areas where the extended hours do not impact upon adjoining property occupants.

(H) **DOMESTIC POWER EQUIPMENT**. Operating or permitting the operation of any power equipment rated five horsepower or less in residential or commercial zones, including, but not limited to, power saw, sander, lawn mower, garden equipment, or snow removal equipment for home or building repair or ground maintenance outdoors between the hours of 10 p.m. and 7 a.m. of the following day or before 9 a.m. on Sunday.

(I) **FIREWORKS OR EXPLOSIVES**. The use of explosives, fireworks, discharge guns or other explosive devices that are audible across a property boundary, public space, or right-of-way without first obtaining a permit as provided by Section 6-3-11. The provision shall not be construed to permit activities prohibited by other statutes, ordinances, or regulations governing such activity.

(J) **LIQUOR LICENSED PREMISES**:

(1) **FAILURE TO CONTROL NOISE**. Permitting or providing either live or recorded amplified music without first having closed all exterior doors and windows of the licensed premises to control noise. Doors may be opened to provide ingress and egress, but shall not be blocked in the open position to provide ventilation. Doors shall be equipped with automatic closing devices to keep them in the closed

position except to permit ingress and egress of patrons.

(2) **OUTDOOR SPEAKERS**. Permitting or causing to exist any loud speaker or sound amplification equipment on any outdoor balcony deck, patio, or garden associated with the licensed premises other than speaker systems or sound amplification equipment in conjunction with approved outdoor dining. As defined in the Land Management Code conditional use approval review, music is limited to 11 a.m. to 10 p.m. and may not emanate beyond the boundaries of the outdoor dining area.

(K) **MAIN STREET BUSINESSES - OUTDOOR SPEAKERS**. Permitting or causing to exist any speaker or sound amplification equipment on the outside of any premise on Main Street with the exception of those businesses which are allowed to have outside speakers as a part of their conditional use permit for outdoor dining or performances or events approved by staff as a part of a master festival license. As defined in the Land Management Code, conditional use approval review, music is limited to 11 a.m. to 10 p.m. and may not emanate beyond the boundaries of the outdoor dining area.

(L) **RACING EVENTS**. Permitting any motor vehicle racing event at any place in violation of Section 6-3-9, without first obtaining a permit as provided by Section 6-3-11.

(M) **POWERED MODEL MECHANICAL DEVICES**. Flying a model aircraft powered by internal combustion engines, whether tethered or not, or the firing or the operation of model rocket vehicles or other similar noise-producing devices, between the hours of 10 p.m. and 7 a.m. or in such a way as to violate Section 6-3-9.

(N) **DYNAMIC BRAKING DEVICES**. Operating any motor vehicle with a dynamic braking device engaged, except:

(1) To avoid imminent danger; or

(2) Where permitted as posted on the following streets:

-Ontario Canyon
-Royal Street
-Aerie Drive

during the following hours: 7 a.m. thru 10 p.m., Monday thru Saturday, and 9 a.m. thru 10 p.m. on Sundays.

(O) **DEFECT IN VEHICLE**. Operating or permitting the operation or use of any truck, automobile, motorcycle, or other motor vehicle because of disrepair or mode of operation violates Section 6-3-9.

(O) **GARBAGE COLLECTION**. Collecting garbage, waste, or refuse between the hours of 10 p.m. and 7 a.m. in any area zoned residential or within three hundred feet (300') of an area zoned residential.

(Q) **STANDING MOTOR VEHICLES**. Operating, causing, or permitting the operation of any motor vehicle or any auxiliary equipment attached thereto either in violation of Section 6-3-9,

or in such a way as to cause a disturbance in a residential zone for a consecutive period of fifteen (15) minutes or longer.

(R) **BELLS AND ALARMS**. Sounding, operating, or permitting the sounding or operation of an electronically amplified signal from any burglar alarm, bell, chime or clock, including but not limited to, bells, chimes, or clocks in schools, houses of religious worship or governmental buildings that fail to meet the standards in Section 6-3-9 for longer than five (5) minutes in any hour.

(S) **FIXED SIREN, WHISTLES, AND HORNS**. Sounding or causing the sounding of any whistle, horn, or siren as a signal for commencing or suspending work or for any other purpose in violation of Section 6-3-9, except as a sound signal of imminent danger.

(T) **RECREATION VEHICLES AND SNOWMOBILES**. Operating a recreational vehicle or snowmobile in a way that violates Section 6-3-9.

6- 3- 9. NOISE LEVELS.

The making and/or creating of excessive or unusually loud noise or sound within the City as identified in the following Subsection (A), or identified and measured in the manner prescribed in Subsection (B), or in violation of restricted hours as outlined in Subsection (C) is unlawful.

(A) On the public right-of-way or upon public property, from the source or device as to be plainly audible at a distance of fifty feet (50') or on private property, as to be plainly audible at the property line.

(B) The noise shall be measured at a distance of at least twenty-five feet (25') from the source of the device upon public property or within the public right-of-way or twenty-five feet (25') from the property line if upon private property, and shall be measured on a decibel or sound level meter of standard design and quality operated on the "A" weighing scale. A measurement of sixty-five (65) decibels shall be considered to be excessive and unusually loud.

(C) Hours of restriction are as follows:

Residential-	10 pm to 7 am Monday through Saturday Not before 9 am Sunday
Commercial	10 pm to 6 am- Monday through Saturday

6- 3-10. EXEMPTIONS.

The following uses and activities shall be exempt from noise level regulations:

(A) Noise of safety signals, warning devices, and emergency pressure relief valves;

(B) Noise resulting from any authorized emergency vehicle when responding to an emergency call or in time of an emergency;

(C) Noise resulting from emergency work;

(D) Noise resulting from lawful fireworks and noisemakers used for celebration of an official holiday;

(E) Any noise resulting from activities of temporary nature during periods permitted by law for which a license or permit has been approved by the Director in accordance with Section 6-3-11;

(F) Any noise resulting from snowmaking activities at ski areas; and

(G) Any noise resulting from the maintenance of golf courses.

(H) Any noise resulting from snow plowing or removal services.

(I) Ten o'clock whistle.

(J) Noise resulting from a duly licensed and operated Public Outdoor Music Plaza pursuant to Title 4, Chapter 8A, of the Municipal Code of Park City.

(Amended by Ord. No. 00-36)

6- 3-11. RELIEF FROM RESTRICTIONS.

Requests for relief from the noise restrictions in these rules and regulations may be made by the Building Official as it pertains to building issues and by the Chief of Police as it pertains to special events and community or private functions or events. Upon granting relief, any conditions outlined and agreed upon shall be complied by the applicant and failure to do so will cause the relief agreement to be suspended.

6- 3-12. MOTOR VEHICLE NOISE.

No person shall operate or cause to be operated any motor vehicle unless the exhaust system is free from defects that affect sound reduction; equipped with a muffler or other noise dissipation device; and not equipped with any cut-out, by-pass or similar device.

6- 3-13. ENFORCEMENT RESPONSIBILITY.

Enforcement responsibility will reside jointly with the Police Department and the Building Department.

6- 3-14. ENFORCEMENT.

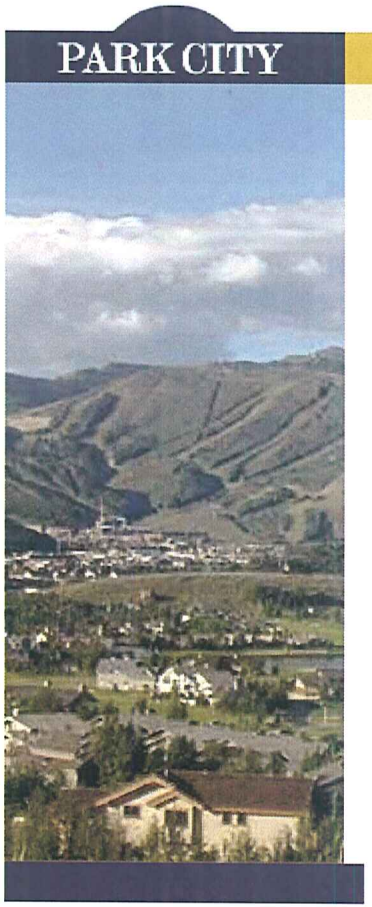
The Police Department and Building Department may, upon discovery or report of a violation or violations of this Chapter, issue a written citation for the violation requiring an appearance in court to answer the charges, or may file a report with the City Prosecutor's Office for review and issuance of an information and summons to court to answer the charges.

6- 3-15. PENALTY.

Any person who is found guilty of violating any of the provisions of these rules and regulations, either by failing to do those acts required herein or by doing a prohibited act, is guilty of a class B misdemeanor, pursuant to U.C.A. Section 26-23-6, as amended. If a person is found guilty of a subsequent similar violation within two (2) years, he is guilty of a class A misdemeanor, pursuant to U.C.A. Section 26-23-6, as amended. Each

day such violation is committed or permitted to continue shall constitute a separate violation.

The City Attorney may initiate legal action, civil or criminal, requested by the Department to abate any condition that exists in violation of these rules and regulations. In addition to other penalties imposed by a court of competent jurisdiction, any person(s) found guilty of violating any of these rules and regulations shall be liable for all expenses incurred by the Department in removing or abating any nuisance or other noise disturbance.



CONSTRUCTION MITIGATION PLAN

Guide to Construction Mitigation Plans

Questions & Answers

When are Construction Mitigation Plans required?
Construction Mitigation plans must be prepared on all construction projects within the Park City limits requiring a Building Permit. A more detailed plan may be required for larger projects that have gone through the planning commission.

Who reviews this plan and how long will it take?
The Building, Planning & Engineering Departments will review your plan. The Chief Building Official makes the final approval. Your plan will be reviewed as quickly as possible and should not take more than 10 working days.

What if I need to work earlier or later than the hours of operation?
A Construction Mitigation Exception Permit may extend hours of operation depending on nature or public safety concerns requiring continuous operation.

What do I need to submit?
This plan shall be written and shall address the following elements: (Please note: all of these elements may not apply to each individual project. There may also be additional elements, unique to the project that involves public health and safety issues.)

1. Hours of Operation
The hours of operation are 7AM to 9PM, Monday thru Saturday, and 9AM to 6PM on Sunday.

2. Parking
Construction vehicles parking may be restricted at construction sites so as to not block reasonable public and safety vehicle access along the street and sidewalks. Within paid and permit only areas, an approved parking plan must be obtained from the Public Works Department.

3. Deliveries
Deliveries of construction materials and supplies, including concrete, may be regulated as to time (hours of operation) and routing.

APPENDIX H

Park City Water Conservation Plan

Water Conservation Plan
Park City, Utah
July 30, 2009

TABLE OF CONTENTS

I. PARK CITY'S WATER SYSTEM - OVERVIEW

Park City, Utah is located in the southwestern corner of Summit County. It is a resort community with a 2009 year-round population of 7,800 and a seasonal population of up to approximately 20,000. Providing water to meet the needs of its citizens has always been a top priority of city leaders and planners. As a result, a well-maintained and operated water system provides the citizens and visitors of Park City with high quality water when and where needed.

Park City has one of the most complex water systems in the state with distribution of water over an elevation range of 2,600 feet controlled by 42 separate pressure zones. Park City's water staff manages and maintains the various components of the system. The department is self-sufficient in that repairs and maintenance are completed in full by department staff including landscaping & irrigation repair, and repair of road subgrade.

A. SYSTEM COMPONENTS

- 1 Water Treatment Plant
- 7 sources (1 additional future): 3 wells, 1 spring, 2 tunnels, 1 wholesale connection, and a future wholesale connection
- 19 storage reservoirs with capacity of 14,650,000 gallons
- 120 miles of pipeline
- 1036 fire hydrants
- 2200 mainline isolation valves
- 191 control valves
- 29 pump stations
- 54 pumps of varying size and capacity
- 54 pressure-reducing stations
- 11 Stream Flow Monitoring Stations
- 5,068 Connections
    - 4,141 Residential
    - 354 Commercial
    - 170 Irrigation
    - 319 Multi-Family
    - 76 Municipal
    - 8 Construction

B. KEY PROJECT ACTIVITIES

- Construction of 2 million gallon Boothill #2 Tank complete
- Construction of Boothill to Woodside Pump Station complete.
- Ongoing improvements to the physical condition of Judge Tunnel.
- Quinn's Water Treatment Plant in design process.

- Park Meadows Well Water Treatment Facility completed and running.
- Fairway Hills Pump station complete.
- Fairway Hills Finished Waterline construction to be complete in 2009.
- Park City Water Importation project design in process, construction to begin in 2009.
- Fixed Base Automatic Water Meter Reading System to be installed 2009/2010.
- Judge pipeline to Quinn's Water Treatment Facility, design to be begin in 2009.
- Holiday Ranch Loop Road Pipeline to be designed in 2009.
- Boothill Transmission Line to be constructed in 2009/2010.

C. OPERATIONS

Operator Responsibility

Park City's Water Department consists of 10 full time water workers, an inspector, an engineer, a water systems analyst, a billing analyst, a conservation coordinator, operations manager and a water manager. The analyst also helps with operations time permitting. The average responsibility for each of Park City's 10 full time water workers includes repairing and maintaining the following system components:

- 2 storage reservoirs
- 7 pumps
- 24 control valves
- 130 fire hydrants
- 275 mainline isolation valves
- 634 metered connections
- 15 miles of pipeline
- 123 Work orders
- 68 water quality samples

(Note: The above figures do not take into account leak and break repairs, miscellaneous customer service requests, new installation inspections and trouble shooting, 24/7 on-call service, and a myriad of additional requests and assignments.)

Annual Maintenance and Repair

- Pump motor inspection & repair
- Pressure reducing valves inspection & repair (monthly)
- Reservoir inspection & cleaning
- System isolation valves inspection & repair
- Pump control valves inspection, repair
- Fire hydrant inspection & repair
- Exercise all mainline valves
- Mainline flushing
- Meter testing and repair
- Check stream flow monitoring Stations

Construction Inspection Responsibilities

The responsibilities of the Construction Inspector include:

- Inspection of Capital Construction Projects
- Coordination w/ Contractors
- Review submittals & pay requests
- Coordination with Developer projects

D. PERFORMANCE (2008 Actuals)

Emergency Mainline breaks
- Initial response – 0 to 1/2 hour
- Begin excavation – 1 - 2 hours
- Water outage – average of 3 hours.

Safety
- 1 work related accidents
- 1 lost days due to accidents

Water Quality
- 550 quality tests
- 100% Compliant with State Division of Drinking Water requirements.

Conservation
- Annual consumption per connection reduced by 3% from 2005.
- Summer consumption (June through September) per connection reduced by 7% from the same period in 2005.

System Preventative Maintenance
- 100% of PRV/regulator checks completed in the first week of the month.

Training/Certification
- 90% of operators certified in distribution and treatment.

Meter Reads
- Additional procurement of MXU's to take place this summer.
- 10 average man days to complete *initial* meter reads each month.

Meter Maintenance
- 98% of faulty meters repaired/replaced within two weeks of identification.

E. INVENTORY OF WATER RESOURCES

The citizens of Park City are currently provided water by a combination of ground water and imported water sources. Park City ground water sources include Judge Tunnel, Thiriot Springs, Spiro Tunnel, and three deep wells: Park Meadows Well, Divide Well, and Treasure Mountain Middle School Well. Park City also has contracts with Jordanelle Special Services District (JSSD) and Weber Basin Water Conservancy District to import water.

Table 1.1 summarizes the existing water sources annual yield based on "average year" and "dry year" conditions:

TABLE 1.1
SUMMARY OF EXISTING WATER SOURCES ANNUAL YIELD

	Annual Yield Average Year (acre-ft)	Annual Yield Dry Year (acre-ft)
Judge Tunnel	**1,648**	**1.049**
Wells	**1,983**	**2,705**
Thiriot Springs	**1,509**	**76**
Spiro Tunnel	**2,312**	**1,768**
Lease of SLC Spiro Water Rights	**954**	**571**
JSSD Connection	**1,000**	**1,000**
Lost Canyon	**2,500**	**2,500**
Total	**11,906**	**9.669**

One challenge associated with tunnel water sources is that their yield will vary from year to year depending on weather conditions. The average year supply is the estimated mean annual supply based on historical data. The dry year supply is the lowest reliable supply from a source based on a combination of statistical data and Park city staff recommendations. In future planning, Park City will prepare for the dry year scenario.

F. WATER RIGHTS

Park City's ground water rights are included as part of two consolidated water rights. These water rights cover use of both ground and surface water under a single right. Table 1.2 shows a simplified summary of Park City ground water rights (based on Park City's 2008 Water Plan).

TABLE 1.2

	Average Year (acre-ft)	Dry Year (acre-ft)
Consolidated Water Rights (35-4244, 35-1660)	7,438	7,438
Additional Deep Well Ground Water Rights (35-9324, 35-10525)	769	769
Total Right With Deep Well Component	**8,207**	**8,207**
Projected 2050 Tunnel and Spring Source Yield Under Consolidated Rights[1]	2,924	1,049
Total Remaining Water Rights For Deep Well Use	**5,283**	**7,158**

With expected tunnel and spring water use removed from the consolidated rights, it is expected that remaining paper right for deep well use will be 5,283 acre-ft in average

[1] Includes all of Judge Tunnel use and Thiriot Springs use in excess of 273 acre-ft (portion of Thiriot covered in rights 35-10628, 35-10629, and 10630).

years and 7,158 acre-ft in dry years. With a project maximum production of approximately 2,800 acre-ft, this indicates that Park City's existing paper water rights are adequate to cover the projected ground water production by the three existing park City wells. To meet future demands, Park City is pursuing additional production capacity to use the remaining available paper water rights it currently has.

G. WATER DEMAND

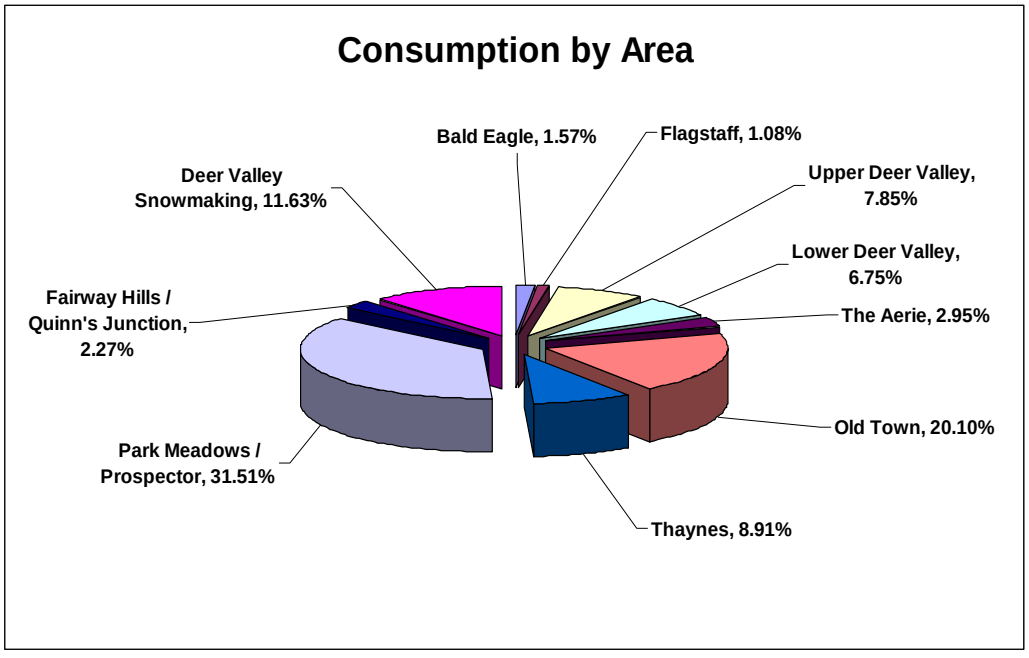
In 2008 Park City residents, businesses, and visitors consumed 1.62 billion gallons of water, or 214 gallons of water per capita per day (gpcd). This represents 120 million gallons less water usage than in 2007. The average usage per connection was reduced by 9%. This is compared to the Utah statewide average of 260 gpcd and 184 gpcd nationally.

Since Park City is a resort destination community, the average daily population was used to determine water use. The current average daily population of 20,724 takes into account full and part time residents, visitors and transient workers.

The gpcd was calculated as follows:
1.62 billion gallons ÷ 365 days ÷ 20,724 avg. daily population = 214 gpcd

The Park City water service area is divided into several zones as shown in Figure 1.2.

FIGURE 1.2



The historical average daily demand since 1991 is shown in Figure 1.3 and the historical peak day demand in Figure 1.4. Figure 1.5 depicts water consumption by source for Park City's seven current water sources.

FIGURE 1.3

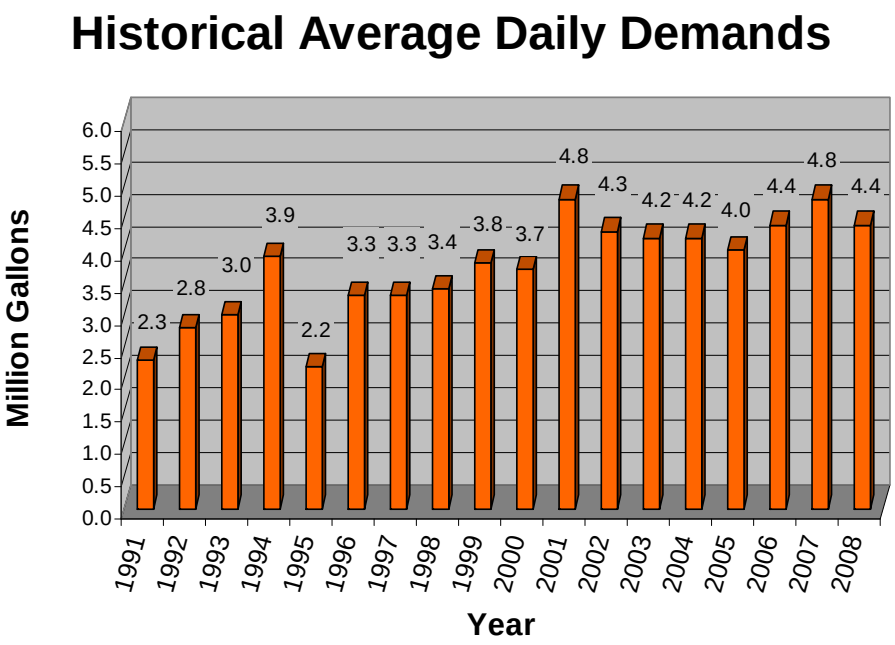


FIGURE 1.4

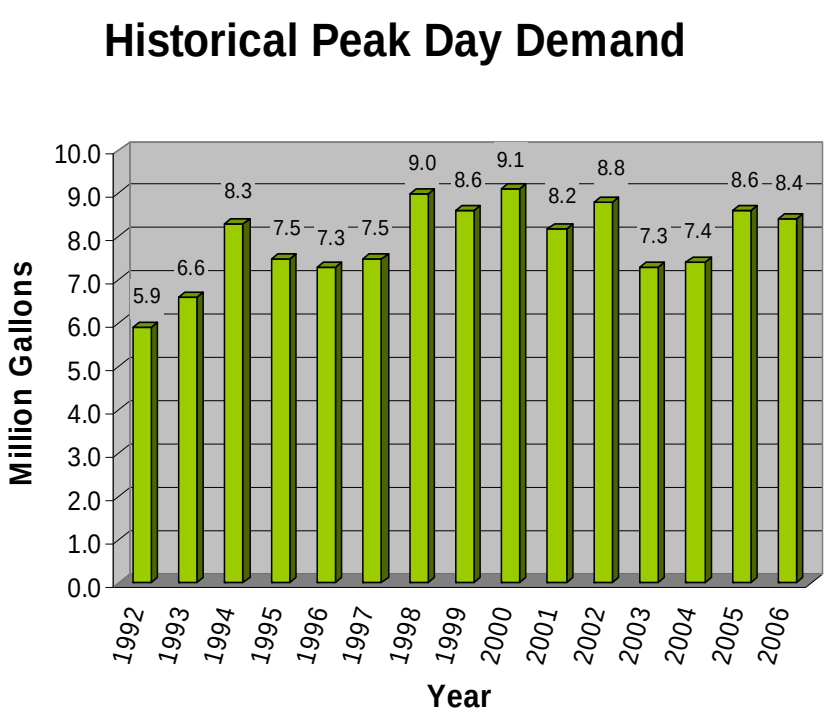


FIGURE 1.5

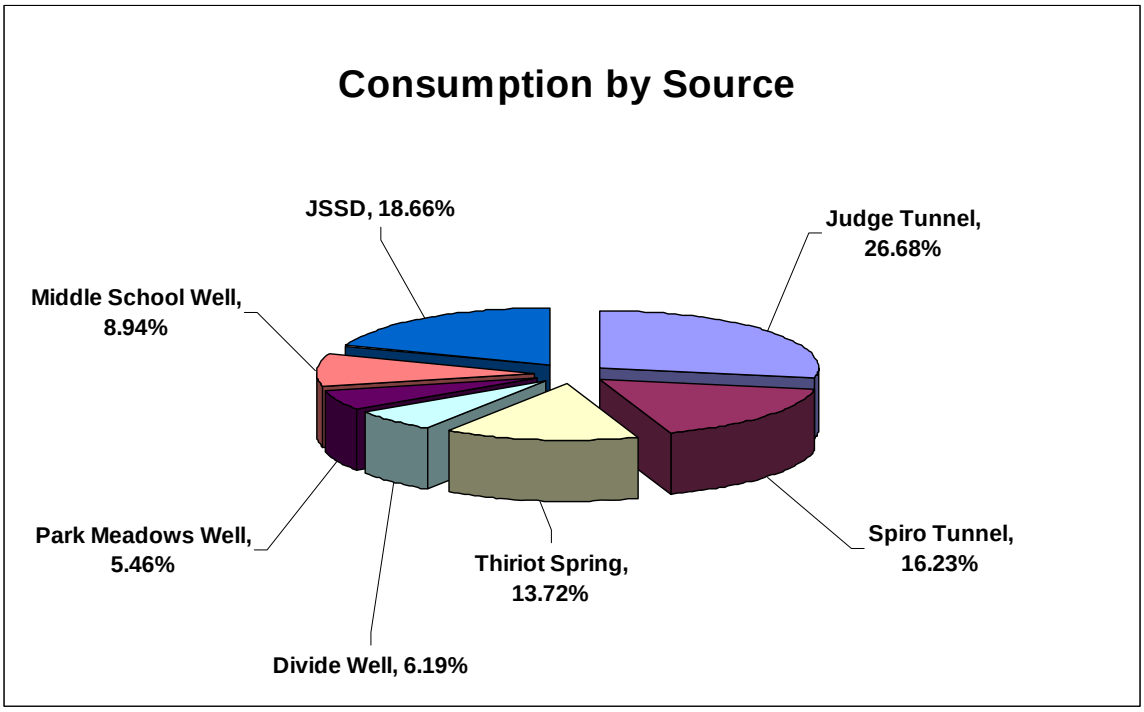


TABLE 1.3
ESTIMATED ANNUAL POTABLE DEMAND

Year	Potable Demand Based on Historic Use (acre-ft)	Potable Demand With Conservation (acre-ft)
2000	4,561	4,561
2010	6,438	6,035
2020	7,419	6,491
2030	8,087	6,739
2040	8,265	6,543
2050	8,442	6,332

Park City has adopted the State's conservation goal of a 25 percent reduction in per connection use by 2050, with half of this amount (12.5 percent) achieved in the first 20 years and the other half between 2020 and 2050. If Park City is successful in achieving this goal, projected potable demands will be reduced to the values shown in the second column of Table 1.3. It should be noted that the table includes all Deer Valley snowmaking demand. This demand has historically been satisfied using potable sources.

In addition to potable demands, Park City also satisfies a number of demands for secondary water. Current secondary water demands include snow making for the Park City Mountain Resort and irrigation water for the Park City and Park Meadows golf courses. With future development in Park City, it is expected that the City will continue

to add amenities that will produce additional secondary demand. This could possibly include additional parks, green space, ski terrain, etc. To account for these expected additional facilities, this report assumes that secondary water demand will grow proportionally with potable demands. Table 1.4 displays the total annual demand projections through 2050 including potable and secondary water use.

TABLE 1.4

Year	Based on Historic Use (acre-ft)	With Conservation (acre-ft)
2000	5,468	5,468
2010	7,718	7,235
2020	8,894	7,782
2030	9,695	8,079
2040	9,908	7,844
2050	10,121	7,590

H. GROWTH PROJECTIONS

Growth projections are based on the most recent version of growth projections developed by the Snyderville Basin Water Reclamation District (SBWRD). These projections, shown in Table 1.5, were developed by examining each individual parcel and determining its potential for development. These projections include consideration of developable area, zoning, the nature of surrounding development, and other factors. Potential growth has been converted to residential equivalent connections and represents residential, commercial, and industrial growth. Each residential equivalent (RE) represents a peak day demand of 1,600 gpd, consistent with Park City's definition of an RE for impact fee purposes. Since much of Park City's population is affected by seasonal, tourist, and daytime worker populations, it was deemed more appropriate to develop demand projections based on connections rather than permanent population.

TABLE 1.5
PARK CITY PROJECTED RESIDENTIAL EQUIVALENTS (RE's)

Year	Primary Demand	Secondary Demand	Overall
2000	**4,290**	**779**	**5,069**
2010	**6,315**	**1,099**	**7,414**
2020	**7,559**	**1,316**	**8,875**
2030	**8,250**	**1,437**	**9,687**
2040	**8,371**	**1,458**	**9,829**
2050	**8,493**	**1,479**	**9,972**

II. WATER PROBLEMS, CONSERVATION MEASURES AND GOALS

Problems

1. Citizens lack understanding of landscaping water requirements and efficient water-use habits and practices. Very few residents know how much water is

required to maintain healthy landscaped areas and how to consistently use water efficiency indoors.

2. Meters are providing inaccurate data due to age and obsolescence. Many meters have been in service for more than 10 years and need to be either repaired or replaced.
3. Many property owners in Park City have landscapes with large areas of grass and other water intensive landscaping. As shown in Figure 1.4, these irrigation needs usually create a water use peak in July. This peak challenges the existing water delivery system and City water operations staff.
4. Water conservation rates have been in place since the late '90's. Park City adopted a more aggressive conservation rate structure in fiscal year 2003; however it has been found that for a large percentage of Park City property owners, conservation pricing is not an effective incentive.

Goals

1. State goal of 25% water use reduction by 2050.
2. Ensure water fund has sufficient financial resources to cover cost of ongoing operations and maintenance, required improvements, capital renewal programs and economic contingencies.
3. Mitigate summer and winter peak day water use.
4. Inventory water consumption from entire PC community.
5. Implement community water consumption reduction program in conjunction with partners.

Measures

1. Install a fixed base automatic water meter reading system.
2. Increase water violation fees.
3. Implement a customer water audit program.
4. Public education.
5. Enact additional conservation ordinances.
6. Implement a meter testing, repair and replacement program**.**

III. CURRENT CONSERVATION PRACTICES

Water conservation can be defined as practices, techniques and technologies that improve the efficiency of water use. Water use efficiency is a necessary component of a successful overall water supply plan and is achieved when demand is decreased to optimize available or planned future water supplies. Water conservation is often equated with temporary restrictions on customer use and although water restrictions can be a useful emergency tool for drought management or service disruptions, effective water conservation programs emphasize lasting day-to-day improvements in water use efficiency.

The Park City Water department has worked closely with the Parks and Golf Maintenance departments for the past several years to implement many diverse conservation measures in the community including:

- Efficient irrigation systems in all City owned parks, golf course and plantings.
- Universal metering.
- Water-wise plantings throughout City owned properties.
- Xeriscape demonstration garden.
- Every other day watering requirement.
- Voluntary third-day watering.
- Weekly Park Record water consumption chart.
- Park City Water website: water conservation tips and xeriscape planning.
- Water bill inserts and direct mailings regarding water conservation issues.
- Enforcement of City water ordinance (since mid-1980's) including part-time citation personnel.
- Recycle Utah children's education programs/Water Festival.
- KPCW public service announcements.
- Promotional water conservation give-aways.
- Water conservation placards in restaurants and hotels.
- Weather-Trak study, using weather controlled irrigation devices.
- Conservation Rate Structure
- Ordinance for water use during periods of drought. See Appendix A.
- FTR position for a Water Resource Analyst to perform the duties of a water conservation manager established July 1, 2008.

These continuing efforts resulted in overall demand reduction from 2000 to 2003, but the number of connections has increased steadily from 2000 to 2007. This fact, along with

the combined pressure of several years of drought, inefficient irrigation and water waste from leaks has prompted Park City to be proactive in seeking new ways to reduce water demand and encourage efficiency in water use. The 2007 water year presented especially difficult challenges in meeting demand in the peak month of July when demand reached 90% of source capacity, in spite of the conservation measures in place and declaration of Stage I Drought conditions. It is important to note that the increased demand is due to outdoor watering and is not a health and safety concern.

Conservation is a message that must be continually reinforced to result in behavioral change. Conservation education must be a persistent, ongoing effort in order to see changes in entrenched water use habits. A common public perception is that water conservation means restricting or curtailing customer use as a temporary response to drought. Though water use restrictions are a useful short-term drought management tool, we would like to emphasize lasting long-term improvements in water use efficiency while maintaining quality of life standards. Water conservation is doing more with less, not doing without. It is our goal to successfully send this message to the community.

One focus of the City's conservation plan is to address peak summer usage levels and, in particular, what can be done to reduce this use over the short-term until new sources are online. Currently, the City experiences strong demand peaks during the summer due to demand for irrigation and other elective uses. This peak seasonal demand is driven by high community standards for the appearance of properties both in the residential and commercial sectors.

The Conservation program we envision and that was approved by City Council in May of 2008, focuses on enhanced education and public outreach, enacting new conservation ordinances and implementing water audits for users during peak seasonal demand periods.

- **Public Education Program**
    - Continue participation in the annual Recycle Utah Water Festival with a booth demonstrating the volume of water lost through leaks.
    - Film Screening of water conservation documentary during AWWA Water Week followed by panel discussion. Continuing participation in Intermountain AWWA education outreach.
    - Screening of Water Conservation Cartoons prior to the weekly Film Series feature coupled with conservation giveaways; publishing in the Park Record and Flipside publications. These cartoons will focus on indoor conservation during the winter months and outdoor conservation during the peak summer months.
    - Monthly conservation message on water bill.
    - Outreach programs to 4^{th} and 9^{th} grades in Park City School Districts.
    - Providing conservation kits to new customers.
    - Public Service Announcements and live interviews via radio to encourage customers to voluntarily cut-back water use during peak months.
    - Direct mailing to notify customers of irrigation guidelines and ordinance/violation fee changes if any.

- **Enact Conservation Ordinances**

Many cities across the US are enacting new water conservation ordinances to curb water demand and raise awareness in water efficiency. The City adopted the following enhancement to the existing Watering Ordinance:

  - *Water Waste:* prohibit wasteful outdoor watering that falls directly onto impervious surfaces and causes unnecessary run-off

- **Customer Outdoor Water Audits**

Similar to a home energy audit, an outdoor water audit is performed by certified professionals who visit the home, evaluate the efficiency of the existing irrigation system and make recommendations for improvements. The Utah State University Extension office has been successfully conducting water audits for the past few years and has agreed to expand the service to the Park City area as a pilot program. In addition, staff plans to work with local certified landscapers to offer this service.

  - Offer outdoor water audits for customers who receive citations to ensure long term compliance. Funded by citation fees for the most part.
  - Offer water audits for a reduced fee to high users or any interested customer.
  - Track participating accounts over 5 year period to determine effectiveness.

- **Enforcement**

The City currently employs one part-time seasonal citation officer in addition to full time regular water operations personnel to watch for violations in the water code. They primarily cite customers who violate the every other day watering ordinance and the hourly watering restrictions of 7:00pm to 10:00am. This method has not been successful due to the large number of customers to watch and the inability to catch customers who water at night on their off-days. The current penalties in place have also not been an effective deterrent in stopping water violations. Approximately 22% of the citations issued in 2007 were repeat offenses. Staff proposed the following adjustments to the enforcement policy and fee schedule.

  - Fines for abusers were increased as of July 1, 2008 according to Table 3.1.

TABLE 3.1

	Previous fines	Current Fines
Warning*	$ 0.00	$ 0.00
First Violation	$ 50.00	$150.00
Second Violation	$100.00	$200.00
Third Violation	$200.00	$400.00
Fourth Violation	$400.00	$500.00
Fifth & subsequent Violation in same Cal. Year	$500.00	$750.00

* No warnings issued in Stage I to IV Drought conditions.

- Require water audits for customers receiving citations to encourage customers to retrofit inefficient irrigation systems. Fund audits with citation fees until budget is exhausted.
- Identify high users that had citations last year. Direct enforcement staff to target them first.
- Implement Fixed Base Technology to identify abusers quickly.

- **Incorporation of Johnson Controls conservation measures**

The measures suggested by Johnson Controls include retrofitting the following City owned plumbing fixtures:

- Replace existing 3.5 gallon per flush toilets with water efficient 1.28 gallon per flush toilets
- Replace existing 2.5 GPM bathroom faucet aerators with water efficient 0.5 gallon per minute VP aerator
- Replace existing 1.5 gallon per flush urinal flush valves with water efficient 1/8 gallon per flush urinal
- Replace existing 3.5 gallon per flush water flush valves with water efficient 1.28 gallon per flush water closet Piston flush valves

This measure is projected to conserve 1.8 million gallons per year.

- **Fixed Base Automatic Water Meter Reading system installation.**

The first step in accurately tracking water consumption is finding the means to bring in accurate and timely water use data. Since the City implemented city-wide metering in the early 1990's, we have relied on monthly meter reads during the summer months and as winter approached, reads were discontinued until April. In 1995, the water department began a retrofit program to install MXU radio read devices which allowed meters to be read monthly throughout the winter months. So far, approximately 2800 meters (approx. 50%) have been retrofitted with the MXU radio read devices. While this measure has improved data collection, it does not provide the means to detect leaks in a timely manner. The current process requires 2 weeks to obtain all meter reads using a combined drive-by and touch read system; 1 week to process high read report and issue work orders; 2 weeks or more to perform work orders, contact customers and record data. Customer service leaks can go undetected for up to 2 months resulting in high water bills for the customer and millions of gallons in water loss. During the critical peak period in 2007, when the Stage 1 drought was in effect, staff found it increasingly difficult to ensure that demand was met**.** The addition of a Fixed Base Automated Meter Reading Technology (AMR) can pinpoint high usage and leaks on a daily basis and increase the ability for staff to enforce and therefore regulate demand.

AMR consists of a system of radio transmitters installed on each meter connection. The City currently supports approximately 5200 meter connections. The AMR system can record hourly meter readings, transmitting up to 4 times per day via a licensed frequency to various collectors placed throughout the city. The information is temporarily stored at the collector and forwarded to a web server. From there it can be downloaded for analysis and billing.

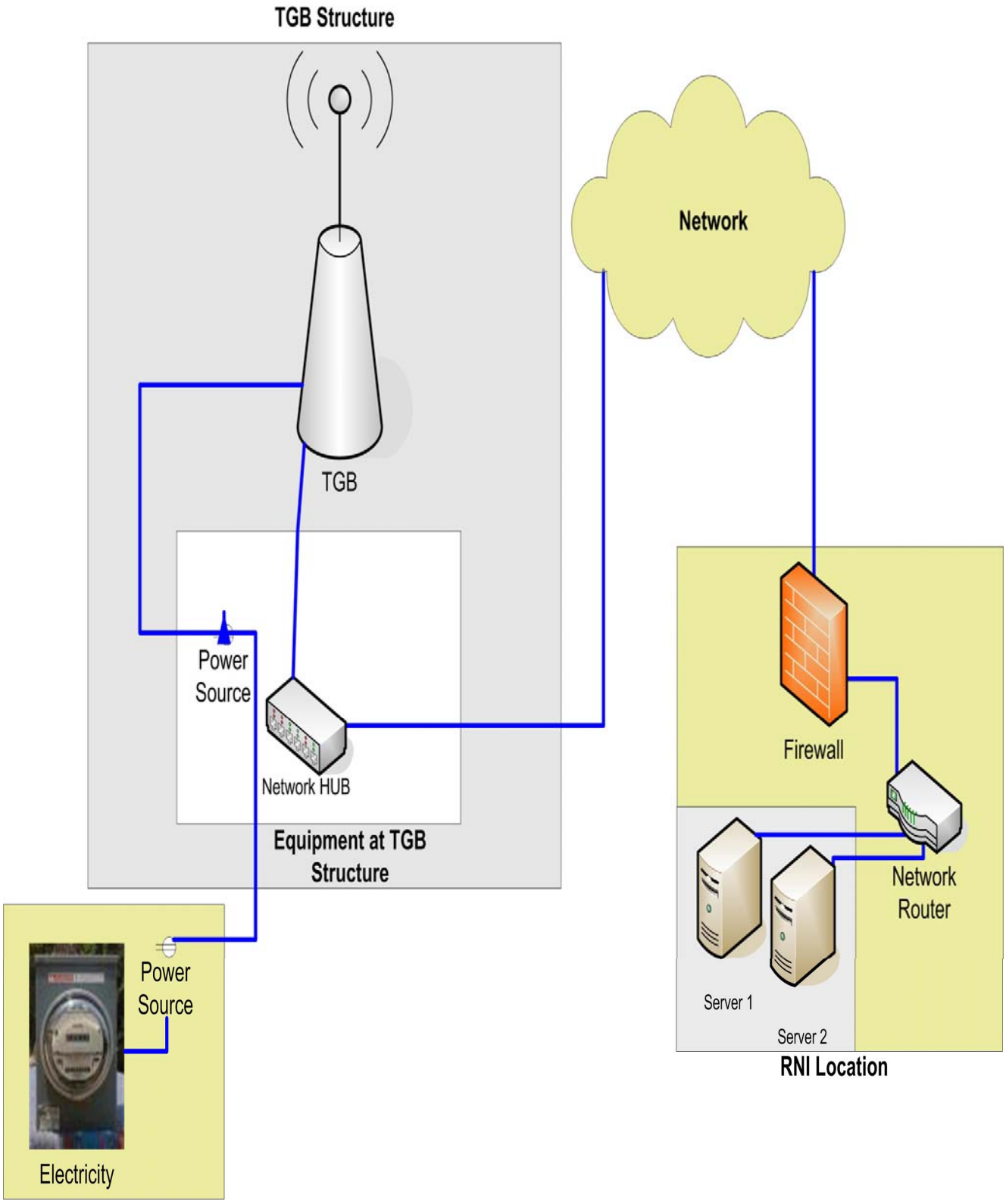
Park City has selected the vendor and will begin installation of this new system in fiscal year 2010. Some of the benefits of this technology include:

A. **Instant Information**

- Ensure revenue protection through better leak/tamper identification and resolution.
- Zero users and stuck meters can be identified daily.
- Main line leak detection technology. Fewer man-hours needed to locate leak; reduced water loss.
- Water abusers can be identified daily.
    - *Allows monitoring of compliance with water ordinance by recording time of day.*
    - *Eliminates need for water code enforcement officers..*
    - *Allows for optimal use of water budgeting methodology.*

B. Enhanced Customer Service

- Citizens will be able to view consumption patterns through a web interface to better manage their own water use.
- Ability to identify leaks more quickly, informing customers of leak before the monthly bill arrives. Results in increased water conservation and customer savings.
- Customers can optionally purchase home water-monitors for instant water-use information.
- Capability to customize notifications to customers via phone or email when usage exceeds a pre-set level.


TGB Structure
Network
TGB
Power
Source
Network HUB
Equipment at TGB
Structure
Firewall
Network
Router
Server 1
Server 2
RNI Location
Power
Source
Electricity

IV. CURRENT PRICING STRUCTURE

Table 4.1 illustrates the pricing structure effective July 1, 2009. Water customers are billed on a monthly basis. Park City implements a tiered rate structure from the June 1 to the October 1 billing period to encourage residents to conserve water.

TABLE 4.1

Type	Block 1	Block 2	Block 3	Block 4
	$2.91 per 1,000 0 - 5,000 gals	**$4.67 per 1,000 5,001-30,000 gals**	**$7.58 per 1,000 30,001-80,000 gals**	**$11.68 per1,000 over 80,000gals**
Single Family	**5= $14.55**	**25= $116.75**	**50=$379.00**	Over 80,000
Multi-Family				
3/4"	0-10,000	10,001-36,000	36,001-80,000	Over 80,000
1"	0-17,000	17,001-57,000	57,001-120,000	Over 120,000
1.5"	0-30,000	30,001-100,000	100,001-200,000	Over 200,000
2"	0-48,000	48,001-160,000	160,001-320,000	Over 320,000
3"	0-96,000	96,001-320,000	320,001-640,000	Over 640,000
4"	0-150,000	150,001-500,000	500,001-1,000,000	Over 1,000,000
6"	0-180,000	180,001-600,000	600,001-1,200,000	Over 1,200,000
Irrigation				
3/4"		0-56,000	Over 56,000	
1"		0-90,000	Over 90,000	
1.5"		0-185,000	Over 185,000	
2"		0-300,000	Over 300,000	
3"		0-600,000	Over 600,000	
4"		0-935,000	Over 935,000	
6"		0-1,865,000	Over 1,865,000	
Commercial - Year round		**$4.09 per 1,000 gals**	**$6.33 per 1,000 gals**	
3/4"		0-150,000	Over 150,000	
1"		0-300,000	Over 300,000	
1.5"		0-500,000	Over 500,000	
2"		0-750,000	Over 750,000	
3"		0-1,200,000	Over 1,200,000	
4"		0-1,700,000	Over 1,700,000	
6"		0-1,700,000	Over 1,700,000	
All users except construction & Commercial between November & May	$4.09 per 1,000 Gals			
Construction Water	$135.77 Monthly Base Rate	$5.38 per 1,000 gals		

V. ADDITIONAL CONSERVATION MEASURES – PRESENT AND FUTURE

1 – System Water Audits

Park City conducts system wide water audits on a yearly basis. These audits analyze the data collected from both the billing and SCADA systems to find discrepancies, address inefficiencies, and do general troubleshooting. The process involves the following:

- Billing data is polled by pressure zone, meter size and type, and billing period.
- System wide consumption is based on daily tank levels and source production, then broken down by pressure zone based on flow meters at pumping and pressure reducing stations.
- Billing periods (approximately 30 days during the summer, five months during the winter) are used to compare the two data sets by zone.
- Known leaks, meter malfunctions and other problems are taken into account also.

Water auditing can help pinpoint sections of the system where the biggest unaccounted for losses occur. Meter inaccuracies may also be found through this process.

2 - Water Budgeting Rate Structure

Another option to consider in regulating water use is a more progressive, scientific approach known as "water budgeting." The Fixed Base Automatic Meter Reading Technology would be optimal in implementing this approach. The following gives a general description of how it works:

- Cities determine their available water supply to determine how much is available for landscaping.
- A water budget (amount of water customers can use) is allocated equitably based on the following types of criteria:
    - Number of people in household and lot size.
    - Average water use per zone.
    - Average water use per meter size.
    - Average water use per meter size and category (i.e. Single Family/Multi-Family/Commercial).
- Water departments use automatic meter reading technology to monitor and enforce water usage, instead of subjective techniques such as water citation personnel.
- Customers are charged rates based on a pre-defined usage structure.
- Customers who are 'careful users' can bank their water or receive a discount; those who exceed their budgets pay penalties.
- During periods of drought, water budgets are reduced.

The benefits of water budgeting are numerous – all customers are treated equally, the program rewards water conservation and most importantly, it's flexible, allowing customers to use their allotted water as they desire. It also emphasizes the importance of conserving water both in and outside the home to meet the water budget goal.

Park City plans to spend the next three years creating a water budgeting plan. The data received from the new Fixed Base Automatic Water Meter Reading System will facilitate future decision making in regards to water budgeting.

3 – Meter Testing, Repair and Replacement Program

In preparation for the installation of a fixed base automatic water meter reading system, staff has been conducting an inventory of all water meters to determine repairs and/or replacements needed. Many of the meters in the City's inventory are older than ten years and are due to be tested and if necessary, repaired or replaced. This project involves the testing, repair and/or replacement of the internal components of these meters to ensure that water usage is recorded accurately. The work will also include installation of Sensus ICE registers; these registers allow meters to be read in one gallon increments, a necessary component of a fixed base meter reading system. The work will be done in stages, testing and repairing the older, larger meters first, that are more likely to be less efficient. The work will bring the meters to new AWWA water meter standards, and it is anticipated that this work will result in increased revenues.

This work will commence on May 29, 2009 and continue through May 31, 2011. This project will initiate an ongoing meter testing and repair schedule to ensure that the City's meters are recording usage accurately.

4 – "Smart" Irrigation Technology

Park City has installed "smart" irrigation technology in parks and golf courses; and encourages customers to do the same. It would be beneficial to implement a rebate program for our water customers.

5 – Large Landscape Conservation Programs

Promote a specialized large landscape water conservation program for all schools and businesses. This program may include site specific water audits, and education on the benefits of computerized efficient irrigation systems.

VI. IMPLEMENTATION AND UPDATING THE WATER CONSERVATION PLAN

To ensure the goals outlined above are achieved, appropriate tasks must be determined, responsibility fixed with the logical person or department, and a time line set for completion of each task. The Water Manager recommended a full time staff position be created to supervise and lead the water conservation program. The City Council authorized this position in the FY 2009 budget process. The official title of this position is Water Resource Analyst IV.

This Water Conservation Plan (WCP) was adopted by the City Council on _____, 2009. The City Council is comprised of:

Dana Williams, Mayor
Jim Hier, Council Member
Liza Simpson, Council Member
Candice Erickson, Council Member
Roger Harlan, Council Member
Joe Kernan, Council Member

The WCP will be revised and updated as required to meet changing conditions and needs. This plan will be submitted to the Utah Division of Water Resources in August of 2009, as required by the Utah Water Conservation Plan Act (73-10-32, UCA). The Resolution for the WCP is attached in Appendix C.

Appendix A
WATER USE DURING PERIODS OF DROUGHT.

(A) **OBJECTIVE**. The objective of this section is to establish authority, policy and procedure by which the Park City Water Service District and Park City Municipal Corporation will assure during periods of water shortages that the peak daily demand for water does not exceed ninety percent (90%) of available water source capacity.

(B) **STAGE ONE DROUGHT**. Stage One of a drought shall exist when the Water Manager, or his or her designee, determines that water demand has exceeded eighty-five percent (85%) of available water source capacity. During Stage One of a drought, the Water Manager shall immediately implement the measures set forth in the Stage I goals outlined in the City's "Water Conservation and Drought Management Plan."

(C) **STAGE TWO DROUGHT**. Stage Two of a drought shall exist when the Water Manager, or his or her designee, determines that water demand continues to exceed ninety percent (90%) of available water source capacity in spite of the implementation of Stage One measures. During Stage Two of a drought, the Park City Mayor, or his or her designee, shall by executive order impose the following regulations:

(1) Lawn and landscape irrigation shall be limited to two (2) times per week. Houses with odd address numbers shall be allowed to use water for outdoor irrigation on Monday and Thursday. Houses with even address numbers shall be allowed to use water for outdoor irrigation on Tuesday and Friday. All other use of water for outdoor irrigation shall be prohibited;

(2) Sidewalk and driveway washing shall be prohibited;

(3) Car washing, unless done at a commercial car wash that recycles water, shall be prohibited; and

(4) The installation of additional lawn or landscaping, whether by seed or sod, shall be prohibited.

(D) **STAGE THREE DROUGHT**. Stage Three of a drought shall exist when the Water Manager, or his or her designee, determines that water demand continues to exceed ninety percent (90%) of available water source capacity in spite of the implementation of Stage Two measures. During Stage Three of a drought, the Park City Mayor, or his or her designee, shall by executive order impose the following regulations:

(1) All acts prohibited during Stage Two of a drought shall be prohibited during Stage Three of a drought;

(2) All use of water for outdoor irrigation shall be prohibited except as needed for the health and safety of residents and visitors as per the Parks Water Reduction Plan;

(3) Use of water in ornamental fountains, ponds, or other aesthetic water features shall be prohibited;

(4) New or additional connections to the Park City Water Service District's water distribution system shall be prohibited;

(5) The use of water for filling or refilling all private and public swimming pools shall be prohibited; and

(6) The irrigation of the Park City Municipal Golf Course shall be per the Golf Water Reduction Plan.

(E) **NOTICE**. The Water Manager in the case of a State One drought and the Mayor in the case of a Stage Two or Stage Three drought, shall provide notice of his or her declaration of drought stage as follows:

(1) Notice shall be published in a newspaper of general circulation in the Park City community at least once each week during the period of drought;

(2) Public service announcements shall be made on a radio station broadcasting in the Park City community at least once each day during the period of drought; and

(3) Written notice shall be posted on all government buildings.

(F) **ENFORCEMENT**. Upon a first violation of this ordinance, in addition to any fine imposed pursuant to Section 28 of this Title, a written notice of the violation shall be affixed to the property where the violation occurred and the customer of record and any other person known to be responsible for the violation or its correction shall be provided with notice. Said notice shall describe the violation and order that it be corrected within such specified time as the Water Manager determines is reasonable under the circumstances.

If the violation is not corrected within the prescribed time, the Water Manager may order the disconnection of water service to the violating property subject to the following procedures:

(1) The City shall give the customer notice by mail or actual notice that water service will be discontinued within a specified time due to the violation and that the customer will have the opportunity to appeal the termination by requesting a hearing scheduled before the City governing body or a City official designated as a hearing officer by the governing body;

(2) If such a hearing is requested by the customer charged with the violation, he or she shall be given a full opportunity to be heard before termination is ordered; and

(3) The governing body or hearing officer shall make findings of fact and order whether service should continue or be terminated.

(G) **RECONNECTION**. A fee established by resolution shall be paid for the reconnection of any water service terminated pursuant to subsection (A). In the event of subsequent violations, the reconnection fee shall be double the fee established by resolution for the second reconnection and triple the fee established by resolution for any additional reconnections.

(Amended by Ord. Nos. 03-28; 07-39; 08-27)

APPENDIX B. WATER CONSERVATION ORDINANCE

13- 1-21. WATER CONSERVATION.

(A) **WATERING SCHEDULE**. In order to conserve water, a limited resource in Utah, outside watering of lawns and landscaped areas using City water will be restricted to every other day from May 1 to September 30. Outside watering at even-numbered street addresses shall be limited to even-numbered days of the month and outside watering at odd-numbered addresses shall be limited to odd-numbered days of the month. Hours of outside watering shall be restricted to between 7:00 p.m. and 10:00 a.m. Exceptions to these outside watering restrictions may be permitted, in writing, by the Water Manager or his/her designee for new landscaping and seeding.

(B) **WATER WASTE PROHIBITED**.

(1) **Definitions**. The following terms, when used in this section, shall have the meanings ascribed herein:

(a) Impervious surface. Any artificially created surface which cannot be penetrated by water or which causes water to run off the surface, including streets, driveways, sidewalks, and rooftops.

(b) Person. Any individual, partnership, firm, corporation, limited liability company, or other legal entity whose name water is provided and billed by the town.

(c) Repeated or flagrant wasting of water. Those situations where persons who have received informal notice that they are wasting water while watering continue to water in the same manner. It does not mean those persons who waste water while watering on solitary or isolated occasions.

(d) City water. All water that passes through the City's water distribution system.

(e) Waste water while watering. Either of the following:

(I) Watering impervious surfaces - Watering so that water falls directly onto impervious surfaces to the extent that running water leaves the property and enters gutters, storm drains, ditches and other conveyances; or

(ii) Excess watering - Watering to the extent that water is allowed to accumulate on the surface of the ground and leave the property entering gutters, storm drains, ditches and other conveyances.

(f) Watering or 'to water'. The act of applying water to the outdoor landscape through means such as moveable sprinklers, installed watering systems and hoses, and similar devices.

(2) **Notice of Prohibited Use**.

(a) The Water Manager or designee shall identify persons who waste water while watering.

(b) Whenever the Water Manager finds that any person wastes water while watering, he or she may give such person verbal or written notice of that fact with recommendations as to how the wasting of water can be eliminated. Such recommendations might include, but are not limited to, redirection of sprinkler heads, resetting of system timers, addition of devices to prevent water pressure fluctuations, or changes in location of sprinkler systems.

(c) Whenever the Water Manager or designee finds that any person repeatedly or flagrantly wastes water while watering, he or she may serve upon such person a written violation notice. Such notice shall be served by personal delivery or by mail, shall identify the location at which water is being wasted while watering, shall identify the manner in which the water is being wasted while watering, and shall specify a time within which the wasting of water while watering shall cease. The notice shall also warn that more severe measures, such as imposition of civil penalties or restriction or termination of water service, may be assessed or brought against the person unless the wasting of water while watering ceases within the time provided. The time given to cease wasting water while watering may range from a requirement for immediately compliance to 30 days, depending upon the facts and circumstances of each case. For instance, if a remedy involves a portable hose or sprinkler, immediate compliance may be appropriate; if a remedy involves repairing or replacing a sprinkler head, several days may be required; or if the remedy involves more extensive or expensive work, up to 30 days may be necessary.

(d) Any person who continues to waste water while watering after the period of time specified in the notice for ceasing such activity shall be issued a citation by personal delivery or by mail, and shall be subject to the fees established by resolution.

(Amended by Ord. No. 08-27)

APPENDIX C

Resolution No. 24-09

RESOLUTION ADOPTING THE PARK CITY MUNICIPAL CORPORATION WATER CONSERVATION PLAN

WHEREAS, Park City Municipal Corporation operates a culinary water system; and

WHEREAS, the City Council understands the pressing need to use water in a more efficient manner to allow for future sustained growth of the community; and

WHEREAS, the Utah Division of Water Resources requires that an updated water conservation plan be submitted every five years for water providers with more than 500 connections; and

WHEREAS, the Water Conservation Plan for Park City, Utah was adopted on January 29, 2004 and the Plan is reviewed no less than every five years because it continues to play a vital role in the future of the community; and

WHEREAS, the City Council held a public hearing on the proposed Water Conservation Plan and finds it appropriate to adopt the proposed Resolution;

NOW, THEREFORE, BE IT RESOLVED:

SECTION 1. CONSERVATION WATER PLAN ADOPTED. The Park City Council hereby adopts the Park City Municipal Corporation Water Conservation Plan, attached this Resolution as Exhibit A.

SECTION 2. EFFECTIVE DATE. This Resolution shall become effective upon adoption.

PASSED AND ADOPTED this 30th day of July 2009.

PARK CITY MUNICIPAL CORPORATION

Mayor Dana Williams

Attest:

Janet M. Scott, City Recorder

Approved as to form:

Mark D. Harrington, City Attorney

PARK CITY SUMMIT COUNTY UTAH CORPORATE Seal MARCH 1, 1884

APPENDIX I

Agency Coordination

Stantec Consulting Inc.
3995 South 700 East Suite 300
Salt Lake City UT 84107
Tel: (801) 261-0090 Fax: (801) 266-1671

stantec.com

Stantec

August 4, 2009

[address]

RE: Park City Municipal Corporation
Judge Tunnel Water Line
Environmental Assessment – Request for Comments

Dear [name]:

Stantec Consulting Inc. is working with Park City Municipal Corporation on the preparation of an Environmental Assessment for the construction of a water pipeline from the Judge Tunnel to a proposed water treatment plant located at Quinn's Junction. This proposed water line will enable Park City Municipal Corporation to utilize the Judge Tunnel water during upset conditions. Upset conditions are defined as the following:

- Spring runoff conditions when flows reach peaks of approximately 2,500 gpm.
- Periods of tunnel maintenance, high flows, or other tunnel upsets, where water turbidity exceeds 1 NTU.

Currently, during these periods of upset flows, the Judge water can not be used as drinking water and must be discharged. This proposal will preserve the Judge Tunnel water as a source for Park City during upset conditions.

Four pipeline alignments are being evaluated for this environmental assessment. The proposed water treatment plant was a part of a prior environmental assessment, and is not a part of this proposed project. Please refer to the attached project description and map for this project. Construction is proposed for spring of 2010.

Stantec is requesting comments from your agency on any issues within the project area to assist us in the development of the environmental assessment. Please submit comments via email to julie.howe@stantec.com, or utilize the attached form **no later than August 14, 2009** in order to keep this project on schedule.

If you have any questions or need additional information, please call me at 261-0090. Thank you for your time.

Respectfully,

STANTEC CONSULTING INC.

Julie Howe
Environmental Scientist
Tel: (801) 261-0090
Fax: (801) 266-1671
julie.howe@stantec.com

PROJECT DESCRIPTION
A maximum of 2,500 gpm of water will be conveyed via a 12-inch pipleline from the Judge Tunnel to a proposed water treatment plant located in Quinn's Junction. The proposed pipeline alignments are as follows:

ALIGNMENT OPTION 1 – TREASURE MOUNTAIN

Option 1a: Treasure Mountain – East Canyon
Judge Tunnel Portal to Spiro Tank; approximately 5.9 miles

Option 1b: Lower Treasure Mountain
Judge Tunnel Portal to Lowell Ave. to Spiro Tank; approximately 5.7 miles

ALIGNMENT OPTION 2 – MARSAC AVENUE

Option 2a: Marsac-Kearns
Daly Canyon to Marsac Ave. to Bonanza Drive to Kearns Blvd; approximately 4.9 miles

Option 2b: Marsac-Rail Trail
Daly Canyon to Marsac Ave. to Bonanza Drive to the Rail Trail; approximately 4.8 miles

ALIGNMENT OPTION 3 – GAMBEL OAK TRAIL

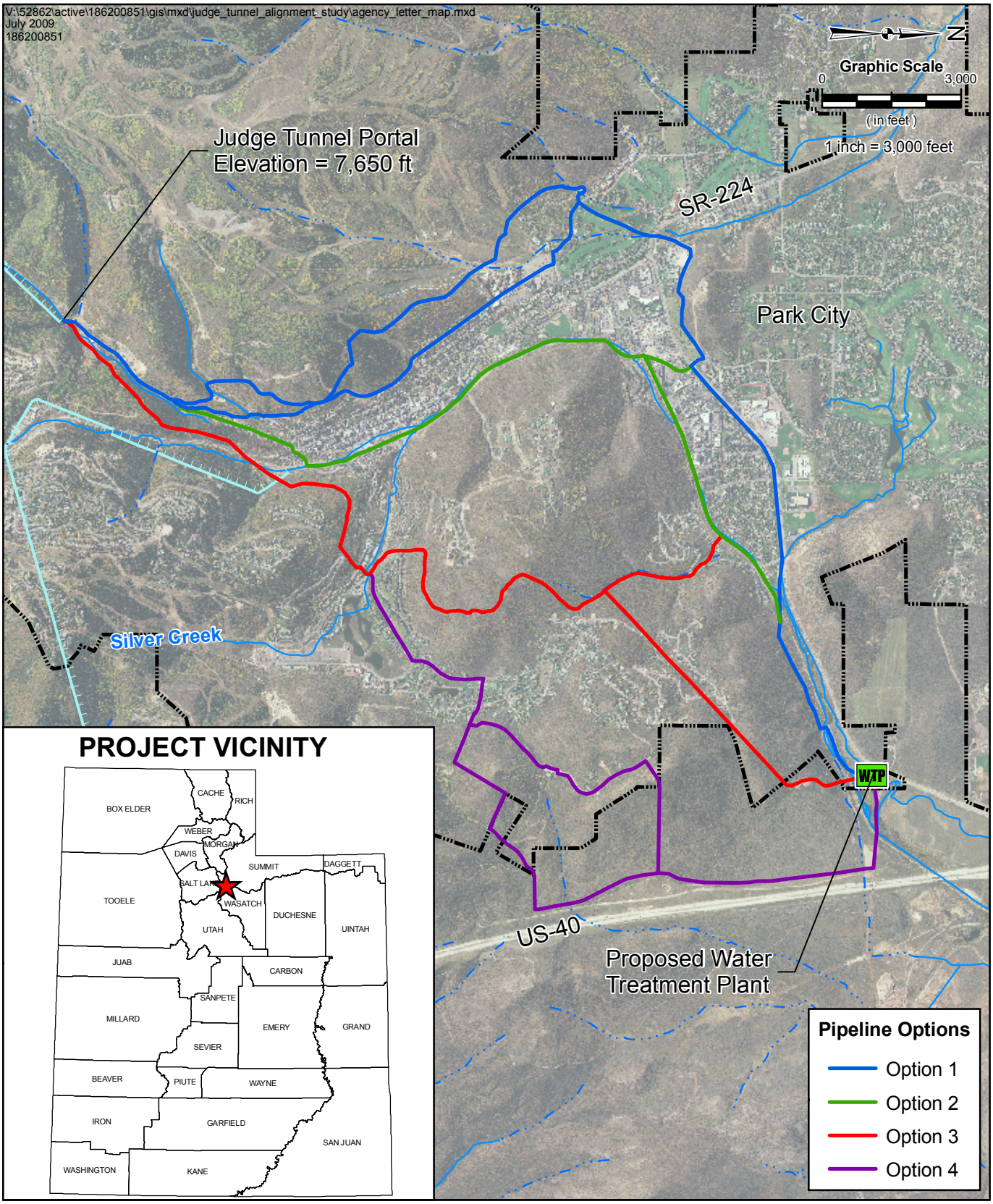
Option 3a: Gambel Oak-Powerline
Rossi Trail to Gambel Oak to Powerline; approximately 4.6 miles

Option 3b: Gambel Oak-ChathamPS
Rossi Trail to Gambel Oak to Chatham PS-Rail Trail; approximately 5.0 miles

ALIGNMENT OPTION 4 – SOLOMERE TRAIL

Option 4a: Solamere-Hidden Hollow
Rossi Trail to Solamere Drive to Hidden Hollow to US40; approximately 5.0 miles

Option 4b: Solamere-Oaks Tank
Rossi Trail to Solamere Drive to the Oaks Tank to US40; approximately 5.4 miles



Stantec Consulting Inc.
3995 S 700 E, Ste. 300
Salt Lake City, Utah
84107-2540
Tel. 801.261.0090
Fax 801.266.1671
www.stantec.com

Legend

- *Park City Limits*
- *Streams*
- *Tunnels*

Client/Project

Park City Municipal Corporation
Judge Tunnel Water Line

Figure No.

1.0

Title

Judge Tunnel Alignment Options Map

PARK CITY MUNICIPAL CORPORATION
JUDGE TUNNEL WATERLINE
ENVIRONMENTAL DOCUMENT

FEDERAL AGENCY COMMENTS

Name & address of Agency/Organization	Letter Received From /Date	Written Comments	Record of Telephone Conversation	
			Date	Comments
BOR				
USFWS	J. Isenhart		8/6/09	Concern expressed regarding reduction of flow in Silver Creek.
BLM				
COE				
EPA				
USDA - NRCS				

STATE AGENCY COMMENTS

Name & address of Agency/Organization	Letter Received From/Date	Written Comments	Record of Telephone Conversation	
			Date	Comments
Utah Department of Community & Culture Division of State History/Utah State Historical Society	L. Hunsaker 8/17/09	Request for review must come from EPA. Email sent to EPA regarding this sent 8/31/09.		
Utah DEQ, Division of Water Quality	B. Damery 8/12/09	Concerns regarding erosion-sediment load and the remobilization of heavy metals. Request the following stipulations in EA: 1) notify DWQ of an increase in turbidity above 10 NTU 2) Protect fish spawning areas 3) Pre & post-construction sampling normalized for flow 4) Obtain permits as applicable: Stormwater Construction, Dewatering, WWTP discharge 5) Submit revegetation plan to DWQ		
Utah DEQ, Division of Air Quality	K. Kreykes 8/4/09	Project subject to Fugitive Dust rules		
Utah DEQ, Division of Drinking Water	J. Martin 8/5/09	Need to go through NEPA process		
Utah DEQ, DERR				
Utah DNR, Division of Forestry, Fire and State Lands				
Utah DNR, Division of Wildlife Resources	S. Lindsey 3/31/10	No sage-grouse leks within 2 miles of project		

Utah DNR, Division of Water Rights – State Engineer				
Utah DNR, Division of Water Rights				
UDOT	C. Easton 8/5/09	No substantive comments, however some questions: Federal involvement? which agency? Have other UDOT offices been contacted such as ROW & permits. If option 2 is preferred, will construction of pipeline be concurrent with the reconstruction of Bonanza Drive in 2010? Timeline for completion of Ea?		
UT Div. Solid & Hazardous Waste				
School & Institutional Trust Land Administration				
Utah Department of Agriculture & Food	G. Hopkin 8/4/09	No comment/no objection		
Uinta-Wasatch-Cache National Forest	A. Soucie 8/24/09	Not on, nor will the project affect National Forest System lands. No objections or comments.		

SUMMIT COUNTY COMMENTS

Name & address of Agency/Organization	**Letter Received From /Date**	**Written Comments**	**Record of Telephone Conversation**	
			Date	**Comments**
Summit Co.				

PARK CITY AGENCY COMMENTS

Name & address of Agency/Organization	**Letter Received From /Date**	**Written Comments**	**Record of Telephone Conversation**	
			Date	**Comments**
Snyderville Basin Water Reclamation District				
Park City Municipal Corporation Water Division				
Park City Engineering	J. Schoenbacher		8/19/09	Stay out of soils zone if possible

JON M. HUNTSMAN, JR.
Governor

GARY R. HERBERT
Lieutenant Governor

State of Utah
DEPARTMENT OF NATURAL RESOURCES

MICHAEL R. STYLER
Executive Director

Division of Wildlife Resources
JAMES F. KARPOWITZ
Division Director

March 31, 2010

Matt Betts
Stantec
3995 South 700 East, Suite 300
Salt Lake City, UT 84107

Subject: Species of Concern Near the Proposed Park City Treated Water Line

Dear Matt Betts:

I am writing in response to your email dated March 30, 2010 regarding information on sage-grouse leks proximal to the proposed treated water line located in Park City, Utah.

The Utah Division of Wildlife Resources (UDWR) does not have records of occurrence for any sage-grouse leks within a two-mile radius of the project area noted above.

The information provided in this letter is based on data existing in the Utah Division of Wildlife Resources' central database at the time of the request. It should not be regarded as a final statement on the occurrence of any species on or near the designated site, nor should it be considered a substitute for on-the-ground biological surveys. Moreover, because the Utah Division of Wildlife Resources' central database is continually updated, and because data requests are evaluated for the specific type of proposed action, any given response is only appropriate for its respective request.

In addition to the information you requested, other significant wildlife values might also be present on the designated site. Please contact UDWR's habitat manager for the northern region, Scott Walker, at (801) 476-2776 if you have any questions.

Please contact our office at (801) 538-4759 if you require further assistance.

Sincerely,

Sarah Lindsey

Sarah Lindsey
Information Manager
Utah Natural Heritage Program

cc: Scott Walker, NRO
Julie Howe, Stantec

1594 W. North Temple, Suite 2110, PO Box 146301, Salt Lake City, UT 84114-6301
telephone (801) 538-4700 • facsimile (801) 538-4709 • TTY (801) 538-7458 • *www.wildlife.utah.gov*

UTAH DNR WILDLIFE RESOURCES

J.

PARK CITY MUNICIPAL CORPORATION
JUDGE TUNNEL WATER PIPELINE
ENVIRONMENTAL ASSESSMENT
COMMENT FORM

Please use this form for comments regarding this project.
Return to Stantec Consulting no later than Aug. 14, 2009.

Name: AL SOUCIE

Agency: UINTA - WASATCH - CACHE NATIONAL FOREST

☐ Received and reviewed information – no comment / no objection

☑ Received and reviewed information – no objection, comments provided below

☐ Received and reviewed information – objection, comments provided below

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Comments:
(use additional paper if needed)

The proposed ~~[redacted]~~ pipeline project is not located on, nor will it affect National Forest System lands. Therefore the agency has no objections or comments to provide.

Appologize for the late reply but I did not see this until 8/24/09.

State of Utah
GARY R. HERBERT
Governor

GREGORY S. BELL
Lieutenant Governor

Department of
Environmental Quality

Amanda Smith
Acting Executive Director

DIVISION OF WATER QUALITY
Walter L. Baker, P.E.
Director

Ms. Julie Howe
Stantec Consulting Inc.
3995 South 700 East Suite 300
Salt Lake City, UT 84107

RE: Park City Municipal Corporation
Judge Tunnel Water Line
Environmental Assessment – Request for Comments

Dear Ms. Howe,

The Utah Division of Water Quality staff has reviewed the referenced Environmental Assessment (EA) request for comments. It is our opinion that applicable water quality standards may be violated unless appropriate Best Management Practices (BMPS) are incorporated to minimize the erosion-sediment load and the remobilization of heavy metals, particularly cadmium and zinc for which there are TMDLs established. We strongly recommend that appropriate water quality parameters, including but not limited to total and dissolved metals, oil and grease, pH, TSS, and total and dissolved metals be monitored for BMPs effectiveness.

Potential impacts from runoff during construction of pipelines, utilities, and access roads may include the degradation of water quality, increased quantities and intensities of peak flows, channel erosion, flooding, and geomorphologic deterioration that may directly or indirectly cause an inability of streams to achieve ecological balance and retain their designated beneficial uses. Emphasis in design should avoid concentration of storm water to fewer drainage locations. The intent should be to allow or mimic the natural flow patterns to the degree possible. Our preferred water pipeline alignment from the Judge Tunnel would be one that would have the minimal cumulative adverse effect on the environment.

The Division of Water Quality requests the following conditions be included in the Environmental Assessment (EA), as follows:

1. Whenever an applicant causes the water turbidity in an adjacent surface water to increase by 10 NTU's or more, the applicant shall notify the Division of Water Quality.

2. Applicant shall protect any potentially affected fish spawning areas.

3. Pre-construction and post sampling rounds to determine the extent of sediment-bound

metals being mobilized into the adjacent and crossed streams. Please have data collection normalized for flow.

4. The following permits from the Division of Water Quality are required prior to the construction phase of the project:

    a. Construction activities that disturb one acre or more are required to obtain coverage under the Utah Pollutant Discharge Elimination System (UPDES) Storm Water General Permit for Construction Activities, Permit No. UTR300000. The permit requires the development of a storm water pollution prevention plan (SWPPP) to be implemented and updated from the commencement of any soil disturbing activities at the site until final stabilization of the project. A fact sheet describing the permit requirements and application procedures are located on our web site https://secure.utah.gov/stormwater/main.html
    b. Dewatering activities, if necessary during the construction, may require coverage under the UPDES General Permit for Construction Dewatering, Permit No. UTG070000. The permit requires water quality monitoring every two weeks to ensure that the pumped water is meeting permit effluent limitations, unless the water is managed on the construction site.

    c. A construction permit will be required if a permanent or temporary wastewater treatment facility is constructed on the site to collect and/or treat sewage effluent. A biosolids permit will be required if biosolids (sewage sludge) is treated on-site.

5. In addition a plan should be submitted to the UDWQ that includes BMPs that will require revegetation with native plants in disturbed areas and a buffer strip along roads, stream banks and wetlands to filter petroleum, sediments and other contaminants from entering dry washes or waters of the State, if it is applicable to this project.

If you have any questions, please contact Bill Damery at (801) 538-6032.

State of Utah

JON M. HUNTSMAN, JR.
Governor

GARY R. HERBERT
Lieutenant Governor

Department of Community and Culture

PALMER DePAULIS
Executive Director

State History

PHILIP F. NOTARIANNI
Division Director

August 10, 2009

Julie Howe
Environmental Scientist
Stantec Consulting, Inc.
3995 South 700 East, Suite 300
Salt Lake City UT 84107

RE: Park City Municipal Corporation, Judge Tunnel Water Line

In reply please refer to Case No. 09-1096

Dear Ms. Howe:

The Utah State Historic Preservation Office received your report on August 3, 2009. We have not yet received a request for review of this project from Park City concerning this undertaking; federal and state law require that SHPO consults with agency or government involved with the project. Consultation with the City would need to identify the agencies involved in this undertaking the cities thoughts about potential to affect cultural resources and request for information about cultural resources that we may have.

If you have questions, please contact me at 801-533-3555 or Lhunsaker@utah.gov or contact Jim Dykmann at 801-533-3523 or Jdykman@utah.gov

Sincerely,

Lori Hunsaker
Deputy State Historic Preservation Officer - Archaeology

Howe, Julie

From: Chuck Easton [ceaston@utah.gov]
Sent: Wednesday, August 05, 2009 11:36 AM
To: Howe, Julie
Subject: Park City Judge Tunnel Water Line Comments

Dear Ms. Howe,

Thank you for requesting the Department's comments regarding Park City's undertaking. I have reviewed the letter and map you sent regarding the subject project. Given the information you have provided, UDOT Environmental has no substantive comments regarding this undertaking or the alignments as shown on the map. I do have a few questions and a request.

Will the environmental assessment be following the National Environmental Policy Act (NEPA) guidelines?
If so, what is the federal involvement?
If there is federal involvement, which federal agency is or will be the lead agency?
Have other UDOT offices been contacted such as Right-of-Way and Permits?
Has a preferred alternative been identified?
If Option 2 is preferred, will construction of the pipeline be concurrent with the reconstruction of Bonanza Drive in 2010?
What is the timeline for completion of the environmental document?

Also, will you please send a larger map with the Pipeline Options outlined?

Thanks for keeping us informed as things progress.

Chuck

Charles Easton, M.A., RPA
Environmental Lead
Utah Department of Transportation, Region Two 2010 South 2760 West Salt Lake City, Utah 84104
801.975.4923 (Office)
801.975.4913 (Fax)

Howe, Julie

From: Jim Martin [jhmartin@utah.gov]
Sent: Wednesday, August 05, 2009 1:58 PM
To: Howe, Julie
Cc: Debbie Oberndorfer; Kate Johnson; Ken Bousfield; Ken Wilde
Subject: Response to Park City Municipal Corporation Judge Tunnel Water Line EA

Hi Julie,
The only response I have to the project is that since it's a Drinking Water project, and if the project will entail the use of either State or Federal monies, you will have to have to step through the NEPA process as was done for the Park City Municipal Corp. & Mountain Regional Water SSD; Water Pipeline Interconnection/Water Treatment Plan Project.

Let me know if you have any questions.
Jim

James H. Martin, P.G.
Division of Drinking Water
P.O. Box 144830
Salt Lake City, UT 84114-4830
Phone: (801) 536-4494
Fax: (801) 536-4211

Howe, Julie

From: Kimberly Kreykes [kkreykes@utah.gov]
Sent: Tuesday, August 04, 2009 3:10 PM
To: Howe, Julie
Cc: Kelly Beck; Kimberly Kreykes
Subject: Comments on the Park City Municipal Corporation Judge Tunnel Water Line Environmental Assessment
Attachments: Park City Municipal Corp Judge Tunnel Water Line.pdf

Julie Howe
Environmental Scientist
Stantec Consulting Inc.
Tel: (801) 261-0090
Fax: (801)266-1671
julie.howe@stantec.com

The following comments are in response to the request for comments on the Park City Municipal Corporation Judge Tunnel Water Line Environmental Assessment:

The proposed project in Summit County is subject to R307-205-5: Fugitive Dust, of the Utah Air Quality Rules, due to fugitive dust that is generated during the excavating phases of the project. This rule applies to construction activities that disturb an area greater than 1/4 acre in size. A permit known as an Approval Order from the Executive Secretary of the Air Quality Board is not required, but steps need to be taken in order to minimize fugitive dust, such as watering and/or chemical stabilization, providing vegetative or synthetic cover or windbreaks. A copy of the rules may be found at www.rules.utah.gov/publicat/code/r307/r307.htm .

I am forwarding your correspondence to the Resource Development Coordination Committee (RDCC), and encourage you to send information on future projects to the RDCC. The RDCC facilitates the exchange of information and coordinates the State response on such actions among state agencies and other levels of government. The RDCC will include the proposed action on their agenda that is updated weekly and forwarded to all state agencies and other levels of government (Section 63-28a, Utah Code). You can contact the RDCC by phone at (801) 537-9230, or by mail at:

Public Lands Policy Coordination Office
5110 State Office Building
P.O. Box 141107
SLC, UT 84114-1107

If you have any questions regarding air quality rules or issues, please feel free to contact me at (801) 536-4042.

Sincerely,

Kimberly Kreykes
Environmental Planning Consultant
Utah Division of Air Quality
(801) 536-4042

kkreykes@utah.gov

State of Utah

JON M. HUNTSMAN, JR.
Governor

GARY R. HERBERT
Lieutenant Governor

Department of Agriculture and Food

LEONARD M. BLACKHAM
Commissioner

KYLE R. STEPHENS
Deputy Commissioner

GEORGE S. HOPKIN
Director, Conservation & Resource Management

August 4, 2009

Ms Julie Howe,
Stantec Consulting Inc.
3995 South 700 East, Suite 300
Salt Lake City, UT 84107

Ref: Park City Water Pipeline EA:

Dear Ms. Howe

At the request of Commissioner Blackham I have reviewed the information you have sent for comment. The Utah Department of Agriculture and Food makes no comment and has no objection.

Sincerely,

George S. Hopkin, Director
Conservation & Resource Management

350 North Redwood Road, PO Box 146500, Salt Lake City, UT 84116-6500
telephone 801-538-7100 • facsimile 801-538-7126 • http://ag.utah.gov

PARK CITY MUNICIPAL CORPORATION
JUDGE TUNNEL WATER PIPELINE
ENVIRONMENTAL ASSESSMENT
COMMENT FORM

Please use this form for comments regarding this project.
Return to Stantec Consulting no later than Aug. 14, 2009.

Name:

Agency:

☒ Received and reviewed information – no comment / no objection

☐ Received and reviewed information – no objection, comments provided below

☐ Received and reviewed information – objection, comments provided below

---

Comments:
(use additional paper if needed)

PARK CITY MUNICIPAL CORPORATION
JUDGE TUNNEL WATER PIPELINE
ENVIRONMENTAL ASSESSMENT
COMMENT FORM

Please use this form for comments regarding this project.
Return to Stantec Consulting no later than Aug. 14, 2009.

Name: Derrick Radke

Agency:

- ☐ Received and reviewed information – no comment / no objection
- ☑ Received and reviewed information – no objection, comments provided below
- ☐ Received and reviewed information – objection, comments provided below

Comments:
(use additional paper if needed)

If a project enters Summit County, it would need the appropriate Permit.

APPENDIX J

Vegetation Survey

Park City Vegetation Survey for the Judge Tunnel Waterline EA

FORBS

GENUS	SPECIES	Common Name	
Achillea	*millefolium L.*	common yarrow	
Anthemis	*cotula L.*	chamomile	
Carduus	*nutans L.*	nodding plumeless thistle	noxious weed
Chenopodium	*album L.*	lambsquarters	
Cirsium	*arvense (L.) Scop.*	Canada thistle	noxious weed
Cryptantha	*spp.*	cryptantha	
Cynoglossum L.		hound's tongue	
Descurainia	*pinnata (Walter) Britton*	western tansymustard	
Dipsacus	*fullonum L.*	Fuller's teasel	
Epilobium	*brachycarpum C. Presl*	tall annual willowherb	
Halogeton	*glomeratus (M. Bieb.) C.A. Mey.*	saltlover	
Helianthus	*annuus L.*	common sunflower	
Lactuca	*serriola L.*	prickly lettuce	
Linaria	*dalmatica (L.) Mill.*	Dalmatian toadflax	
Machaeranthera	*canescens (Pursh) A. Gray*	hoary tansyaster	
Medicago	*sativa L.*	alfalfa	
Mentha	*arvensis L*	wild mint	
Polygonum	*douglasii Greene*	Douglas' knotweed	
Rumex	*crispus L.*	curly dock	
Sisymbrium	*altissimum L.*	tall tumblemustard	
Tanacetum	*vulgare L.*	common tansy	upper
Taraxacum	*officinale F.H. Wigg.*	common dandelion	
Tragopogon	*dubius Scop.*	yellow salsify	
Typha	*latifolia L.*	cattail	
Urtica	*dioica L.*	stinging nettle	

Grass

GENUS	SPECIES	Common Name
Achnatherum	*hymenoides (Roem. & Schult.) Barkworth*	Indian ricegrass
Agropyron	*cristatum (L.) Gaertn.*	crested wheatgrass
Agrostis	*stolonifera L.*	creeping bentgrass
Bromus	*inermis Leyss.*	smooth brome
Bromus	*tectorum L.*	cheatgrass
Carex	*nebrascensis Dewey*	Nebraska sedge
Elymus	*elymoides (Raf.) Swezey*	squirreltail
Juncus	*arcticus Willd.*	arctic rush
Phalaris	*arundinacea L.*	reed canarygrass
Poa	*secunda J. Presl*	Sandberg bluegrass
Thinopyrum	*intermedium (Host) Barkworth & D.R. Dewey*	intermediate wheatgrass

Shrub

GENUS	SPECIES	Common Name	
Amelanchier	*alnifolia (Nutt.) Nutt. ex M. Roem.*	Saskatoon serviceberry	
Artemisia	*tridentata Nutt.*	big sagebrush	
Chrysothamnus	*viscidiflorus (Hook.) Nutt.*	green rabbitbrush	
Lonicera	*involucrata (Richardson) Banks ex Spreng.*	twinberry honeysuckle	mid
Physocarpus (Camb.) Raf.		ninebark	upper
Purshia	*tridentata (Pursh) DC.*	antelope bitterbrush	
Rosa	*woodsii Lindl.*	Woods' rose	
Rubus	*parviflorus Nutt.*	thimbleberry	
Salix	*exigua Nutt.*	narrowleaf willow	
Salix	*spp.*		
Sanguisorba	*minor Scop.*	small burnet	
Symphoricarpos	*oreophilus A. Gray*	mountain snowberry	

This is a rapid plant assessment done in September 2010. Plants on and near the projected corridor were looked at. Extreme caution should be used to not further exacerbate the existing noxious weeds or introduce new ones. Removal of mature trees should be done only when necessary and after a raptor nest review during nesting periods.

APPENDIX K

Snyderville Basin Water Reclamation District Discharge Permit

WATER RECLAMATION DISTRICT

Pretreatment Industrial User Permit (PIU) No. PIU 006

In compliance with provisions of the *Snyderville Basin Water Reclamation District Pretreatment Program Chapter 1, Section 1-1 (the "Pretreatment Program")*,

Park City Municipal Corporation: Quinn's Junction Water Treatment Plant (QJWTP)

is hereby authorized to discharge from its facility located at 3800 Richardson Flat Road, Park City, Utah, 84060, with the outfall at manhole 2-4-02-011, to the Snyderville Basin Water Reclamation District's (SBWRD) sanitary sewer system in accordance with discharge point, effluent limitations, monitoring requirements and other conditions set forth herein. This permit is only for the above-described QJWTP with a maximum water treatment capacity of three million gallons per day (3 MGD). Any increase in treatment capacity, discharge volume, or discharge quality to SBWRD's sanitary sewer system will require a new Pretreatment Industrial User Permit.

This permit shall become effective August 1, 2010.

This permit and the authorization to discharge shall last 3 years and expires at midnight, July 31, 2013.

Signed this 28 day of July, 2010.

Michael Luers
General Manager
SBWRD

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1. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENT

A. Definitions:

1. The "30-day (and monthly) average" is the arithmetic average of all samples collected during a consecutive 30-day period or calendar month, whichever is applicable. The calendar month shall be used for purposes of reporting self-monitoring data on discharge monitoring report forms.

2. The "7day (and weekly) average" is the arithmetic average of all samples collected during a consecutive 7-day period or calendar week, whichever is applicable. The 7-day and weekly averages are applicable only to those effluent characteristics for which there are 7-day average effluent limitations. The calendar week which begins on Sunday and ends on Saturday, shall be used for purposes of reporting self-monitoring data on discharge monitoring report forms. Weekly averages shall be calculated for all calendar weeks with Saturdays in the month. If a calendar week overlaps two months (i.e., the Sunday is in one month and the Saturday in the following month), the weekly average calculated for that calendar week shall be included in the data for the month that contains the Saturday.

3. "Daily Maximum" ("Daily Max.") is the maximum value allowable in any single sample or instantaneous measurement.

4. "Composite samples" shall be flow proportioned. The composite sample shall, as a minimum, contain at least four (4) samples collected over the composite sample period. Unless otherwise specified, the time between the collection of the first sample and the last sample shall not be less than six (6) hours nor more than 24 hours. Acceptable methods for preparation for composite samples are as follows:

   a. Constant time interval between samples, sample volume proportional to flow rate at time of sampling;

   b. Constant time interval between samples, sample volume proportional to total flow (volume) since last sample. For the first sample, the flow rate at the time the sample was collected may be used;

   c. Constant sample volume, time interval between samples proportional to flow (i.e., sample taken every "X" gallons of flow); and,

   d. Continuous collection of sample, with sample collection rate proportional to flow rate.

5. A "grab" sample, for monitoring requirements, is defined as a single "dip and take" sample collected at a representative point in the discharge stream.

6. An "instantaneous" measurement, for monitoring requirements, is defined as a single reading, observation, or measurement.

7. "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

8. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility.

9. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonable be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

10. "District Manager" the General Manager of SBWRD, or their designee.

11. "EPA" means the United States Environmental Protection Agency.

12. "Pretreatment Program" means the *"Snyderville Basin Water Reclamation District Pretreatment Program."*

13. "Best Management Practices" ("BMPs") means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the State. *BMPs* also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

14. *"CWA"* means *The Federal Water Pollution Control Act,* as amended, by *The Clean Water Act of 1987.*

15. "Point Source" means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharges. This term does not include return flows from irrigated agriculture or agriculture storm water runoff.

B. Description of Discharge Point:

The authorization to discharge industrial wastewater provided under this permit is limited to those outfalls specifically designated below as discharge locations. Discharges at any location not authorized under a SBWRD permit is a violation of the *Pretreatment Program* and may be subject to penalties under the *Pretreatment Program.* Knowingly discharging from an unauthorized location or failing to report an unauthorized discharge may be subject to criminal penalties as provided under the *Pretreatment Program.*

Outfall Number	Location of Discharge Point
2-4-02-011	Sampling manhole, served by an autosampler, located approximately 10 feet from East side of the facility.

C. Prohibited Discharge.

Pursuant to the *Pretreatment Program, Chapter 2 Section 2-2 part C* the permittee, under no circumstances shall allow introduction of the following pollutants into the publicly owned treatment works (POTW) from manhole 2-4-02-011:

1. Pollutants which create a fire or explosion hazard in the publicly owned treatment works (POTW), including, but not limited to, wastestreams with a closed cup flashpoint of less than sixty (60) degrees Centigrade (140 degrees Fahrenheit) using the test methods specified in 40 CFR 261.21;

2. Pollutants which will cause corrosive structural damage to the POTW, but in no case, discharges with pH lower than 6.0 or greater than 9.0;

3. Solid or viscous pollutants in amounts which will cause obstruction to the flow in the POTW, or other interference with the operation of the POTW;

4. Any pollutant, including oxygen demanding pollutants (e.g., BOD), released in a discharge at a flow rate and/or pollutant concentration which will cause interference with the POTW:

5. Heat in amounts which will inhibit biological activity in the POTW resulting in interference but in no case heat in such quantities that the influent temperature at the POTW treatment plant exceeds forty (40) degrees Centigrade (104 degrees Fahrenheit);

6. Petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through;

7. Pollutants which result in the presence of toxic gases, vapors, or fumes within the POTW in a quantity that may cause acute worker health or safety problems;

8. Any trucked or hauled pollutants to the POTW, except at discharge points designated by the POTW.

9. Any specific pollutant which exceeds a local limitation established by the POTW in accordance with the requirements of *40 CFR 403.5(c) and (d);*

10. Any pollutant that causes pass through or interference at the POTW.

D. Specific Limitations and Self-monitoring Requirements a/.

1. Effective immediately and lasting the duration of this permit, the permittee is authorized to discharge to manhole 2-4-02-011. Such discharges shall be limited and monitored by the permittee as specified below:

Table #1

Maximum Monthly Flow Volume, b/	**Maximum Total Suspended Solids (TSS) c/**	**Maximum Total BOD_5 d/**
Gallons/Month	**Lbs/Month**	**Lbs/Month**
400,000	16,055	3,851

Discharge Limitations a/		Monitoring Requirements	
Effluent Characteristics	Average 30-Day	Minimum Measurement Frequency i/	Sample Type
Flow, MGD, b/	See Table 1	Continuous	Recorder
Total Suspended Solids, c/	See Table 1	Monthly	Composite
Total BOD_5, d/	See Table 1	Monthly	Composite
Total Arsenic, mg/L, e/	0.890	Monthly	Composite
Total Cadmium, mg/L, e/	0.075	Monthly	Composite
Total Chromium, mg/L e/	0.010	Monthly	Composite
Total Copper, mg/L, e/	0.160	Monthly	Composite
Total Lead, mg/L, e/	1.060	Monthly	Composite
Total Mercury, mg/L f/	Non-Detect	Monthly	Composite
Total Nickel, mg/L e/	0.050	Monthly	Composite
Total Selenium, mg/L e/	0.010	Monthly	Composite
Total Silver, mg/L e/	0.020	Monthly	Composite
Total Zinc, mg/L, g/	12.630	Monthly	Composite
Free Cyanide, mg/L h/	0.100	Monthly	Grab

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units in any sample and shall be monitored monthly by a grab or instantaneous sample.

a/ See Definitions, *Part 1.A* for definition of terms.

b/ Flow measurements of effluent volume shall be made continuously in such a manner that the permittee can affirmatively demonstrate that representative values are being obtained. The average daily and average monthly flow measurements shall be reported monthly to SBWRD on or before the 20th of the following month.

c/ Use Standard Methods 2540D. Total Suspended Solids (TSS) analysis shall be conducted at least once/month; and the monthly average of both concentration (mg/l) and lbs/day and average lbs/month reported.

d/ Use Standard Methods 5210B. BOD_5 analysis shall be conducted at least once/month; and the monthly average of both concentration (mg/l) and lbs/day and average lbs/month reported.

e/ Use EPA method 200.8

f/ Use EPA method 1631

g/ Use EPA method 200.7

h/ Use Standard Methods 4500CN-E

i/ Reduction in frequency of required monthly sampling for metals may be requested after 12 consecutive months of compliance with all discharge limitations.

2. Samples taken in compliance with the monitoring requirements specified above shall be taken after the final pretreatment process for and prior to mixing with any other wastestream. Only certified laboratories will be used to analyze samples.

II. MONITORING, RECORDING AND REPORTING REQUIREMENTS

A. Representative Sampling. Samples taken in compliance with the monitoring requirements established under *Part I* shall be collected from the effluent stream prior to discharge into SBWRD's system. Samples and measurements shall be representative of the volume and nature of the monitored discharge. Wastestream samples shall be collected at a location representative of the quality of wastestream immediately prior to the use-disposal practice.

B. Monitoring Procedures. Monitoring must be conducted by a certified laboratory according to test procedures approved under *Pretreatment Program Chapter 4 Section 4-14*, unless other test procedures have been specified in this permit.

C. Penalties for Tampering. The *Pretreatment Program* provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than six months per violation, or by both. (*See Chapter 7 of the Pretreatment Program for more detail).*

D. Reporting of Monitoring Results. Monitoring results obtained during the previous month shall be summarized for each month and reported on a Discharge Monitoring Report Form (EPA No. 3320-1), postmarked no later than the 28th day of the month following the completed reporting period. The first report is due on the 28th of the month following start-up of the facility. If no discharge occurs during the reporting period, "no discharge" shall be reported. Legible copies of these, and all other reports required herein, shall be signed and certified in accordance with the requirements of *Signatory Requirements (see Part IV.G)*, and submitted to the Pretreatment Coordinator, SBWRD at the following addressee:

Original to: Snyderville Basin Water Reclamation District
2800 Homestead Road
Park City, Utah 84098

E. Compliance Schedules: Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any Compliance Schedule of this permit shall be submitted no later than 21 days following each schedule date.

F. Additional Monitoring by the Permittee: If the permittee monitors any parameter more frequently than required by this permit, using test procedures approved under the Pretreatment Program or as otherwise specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR. Such increased frequency shall also be indicated. Only those parameters required by the permit need to be reported.

G. Records Contents. Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements:
2. The individual(s) who performed the sampling or measurements;
3. The date(s) and time(s) analyses were performed;
4. The individual(s) who performed the analyses;
5. The analytical techniques or methods used; and,
6. The results of such analyses.

H. Retention of Records. The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least five years from the date of the sample, measurement, report or application. This period may be extended by request of the General Manager at any time. A copy of this SBWRD permit must be maintained on site during the duration of activity at the permitted location.

I. Twenty-four Hour Notice of Noncompliance Reporting.

1. The permittee shall (orally) report any noncompliance which may seriously endanger health or environment as soon as possible, but no later than twenty-four (24) hours from the time the permittee first became aware of circumstances. The report shall be made to SBWRD, (435) 649-7993 ext. 238. Permittee must also repeat the sampling and submit in writing the results of this second analysis within 30 days of the results of the first violation.

2. The following occurrences of noncompliance shall be reported by telephone (435) 649-7993 ext. 238 as soon as possible but no later than 24 hours from the time the permittee becomes aware of the circumstances:

   a. Any noncompliance which may endanger health or the environment;

   b. Any unanticipated bypass which exceeds any effluent limitation in the permit (See *Part III.G, Bypass of Treatment Facilities)*;

   c. Any upset which exceeds any effluent limitation in the permit (See *Part III.H, Upset Conditions*); or,

   d. Violation of a maximum daily discharge limitation for any of the pollutants listed in the permit.

3. A written submission shall be provided within five working days of the time that the permittee becomes aware of the circumstances. The written submission shall contain:

   a. A description of the noncompliance and its cause;

   b. The period of noncompliance, including exact dates and times;

   c. The estimated time noncompliance is expected to continue if it has not been corrected;

   d. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

e. Steps taken, if any, to mitigate the adverse impacts on the environment and human health during the noncompliance period.

4. The General Manager may waive the written report on a case-by-case basis if the oral report has been received within 24 hours by SBWRD, (435) 649-7993.

5. Reports shall be submitted to the addresses in *Part II.D, Reporting of Monitoring Results.*

6. Re-sampling for violations must be accomplished within 30 days from the time permittee becomes aware of the sampling results.

J. Other Noncompliance Reporting. Instances of noncompliance not required to be reported within 24 hours shall be reported at the time that monitoring reports for *Part II.D* are submitted. The reports shall contain the information listed in *Part II.I.3.*

K. Inspection and Entry. The permittee shall allow the General Manager, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of the permit.

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and,

4. Sample or monitor at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by the *Pretreatment Program*, any substances or parameters at any location.

III. COMPLIANCE RESPONSIBILITIES

A. Duty to Comply. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the *Pretreatment Program* and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application. The permittee shall give advance notice to the General Manager of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

B. Penalties for Violations of Permit Conditions: The *Pretreatment Program* provides that any person who violates a permit condition implementing provisions of the *Pretreatment Program* is subject to a civil penalty not to exceed $10,000 per day of such violation. Any person who willfully or negligently violates permit conditions of the *Pretreatment Program* is subject to fines pursuant to *Chapter 7* of the Pretreatment Program *(Chapter 5 and 6 may also apply).* Nothing in this permit shall be construed to relieve the permittee of the civil or criminal penalties for noncompliance.

C. Need to Halt or Reduce Activity not a Defense. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

D. Duty to Mitigate. The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

E. Proper Operation and Maintenance. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

F. Removed Substances. Collected screening, grit, solids, sludges, or other pollutants removed in the course of treatment shall be buried or disposed of in such a manner so as to prevent any pollutant from entering any waters of the state or creating a health hazard. Sludge/digester supernatant and filter backwash shall not directly enter either the final effluent or waters of the state by any other direct route.

G. Bypass of Treatment Facilities.

1. Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded (i.e. for essential maintenance to assure efficient operation). These bypasses are not subject to the provisions of paragraphs 2 and 3 of this section. Return of removed substances, as described in *Part III.F*, to the discharge stream shall not be considered a bypass under the provisions of this paragraph.

2. Notice:
   a. Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice at least ten (10) days before the date of the bypass.

   b. Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required under *Part II.I, Twenty-four Hour Reporting.*

3. Prohibition of bypass:
   a. Bypass is prohibited and the General Manager may take enforcement action against a permittee for a bypass, unless:

      (1) The bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

      (2) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and,

      (3) The permittee submitted notices as required under paragraph 2 of this section.

   b. The General Manager may approve an anticipated bypass, after considering its adverse effects, if the General Manager determines that it will meet the three conditions listed above in paragraph 3.a of this section.

H. Upset Conditions.

1. Effect of an upset. An upset constitutes and affirmation defense to an action brought for noncompliance with technology based permit effluent limitations if the requirements of paragraph 2. of this section are met. The General Manager's administrative determination regarding a claim of upset cannot be judiciously challenged by the permittee until such time as an action is initiated for noncompliance.

2. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

   a. An upset occurred and the permittee can identify the cause(s) of the upset;

   b. The permitted facility was at the time being properly operated;

   c. The permittee submitted notice of the upset as required under *Part II.I, Twenty-four Hour Notice of Noncompliance Reporting;* and,

   d. The permittee complied with any remedial measures required under *Part III.D, Duty to Mitigate.*

3. Burden of proof. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

I. Toxic Pollutants. The permittee shall comply with effluent standards or prohibitions established under the Pretreatment Program for toxic pollutants within the time provided in the regulations that establish those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirements.

J. Changes in Discharge of Toxic Substances. Notification shall be provided to the General Manager as soon as the permittee knows of, or has reason to believe:

1. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

   a. One hundred micrograms per liter (100 ug/L);

   b. Two hundred micrograms per liter (200 ug/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/L) for 2,4-dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;

   c. Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with the Pretreatment Program

2. That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

   a. Five hundred micrograms per liter (500 ug/L)'

   b. One milligram per liter (1 mg/L) for antimony:

   c. Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with the Pretreatment Program.

K. Industrial Pretreatment. Any wastewaters discharged to the sanitary sewer, either as a direct discharge or as a hauled waste, are subject to federal, state and local pretreatment regulations. Pursuant to Section 307 of *The Water Quality Act of 1987,* the permittee shall comply with all applicable federal General Pretreatment Regulations promulgated at *40 CFR 403*, the State Pretreatment Requirements at *UAC R-317-8-8,* and any specific local discharge limitations developed by the Public Owned Treatment Works (POTW) accepting the wastewaters.

In addition, in accordance with *40 CFR 403.12(p)(1)*, the permittee must notify the POTW, the EPA Regional Waste Management Director, and the state hazardous waste authorities, in writing, if they discharge any substance into a POTW which if otherwise disposed of would be considered a hazardous waste under *40 CFR 261.* This notification must include the name of the hazardous waste, the EPA hazardous waste number, and the type of discharge (continuous or batch).

IV. GENERAL REQUIREMENTS

A. Planned Changes. The permittee shall give notice to the General Manager as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required when the alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are not subject to effluent limitations in the permit. In addition, if there are any planned substantial changes to the permittee's existing sludge facilities or their manner of operation or to current sludge management practices of storage and disposal, the permittee shall give notice to the General Manager of any planned changes at least 30 days prior to their implementation.

B. Anticipated Noncompliance. The permittee shall give advance notice to the General Manager of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

C. Permit Actions. This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition. This permit may be modified, revoked or reissued if or when SBWRD is subject to new or revised discharge limitations issued by state or federal regulatory agencies.

D. Duty to Reapply. If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee shall apply for and obtain a new permit. The application shall be submitted at least 180 days before the expiration date of this permit.

E. Duty to Provide Information. The permittee shall furnish to the General Manager, within a reasonable time, any information which the General Manager may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the General Manager, upon request, copies of records required to be kept by this permit.

F. Other Information. When the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or any report to the General Manager, it shall promptly submit such facts or information.

G. Signatory Requirements. All applications, reports or information submitted to the General Manager shall be signed and certified.

1. All permit applications shall be signed by either a principal executive officer or ranking elected official.

2. All reports required by the permit and other information requested by the General Manager shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

   a. The authorization is made in writing by a person described above and submitted to the General Manager, and;

   b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility, such as the position of plant manager, superintendent, position of equivalent responsibility, or an individual position having overall responsibility for environmental matters. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.)

3. Changes to authorization. If an authorization under paragraph *IV.G.2* is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of paragraph *IV.G.2* must be submitted to the General Manager prior to or together with any reports, information, or applications to be signed by an authorized representative.

4. Certification. Any person signing a document under this section shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

H. Penalties for Falsification of Reports. The *Pretreatment Program* provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction be punished by a fine of not more than $10,000.00 per violation, or by imprisonment for not more than six months per violation, or by both. (*See Chapter 7 of the Pretreatment Program*).

I. Availability of Reports. Except for data determined to be confidential under *UAC R317-8-3.2*, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the office of General Manager. As required by the *Pretreatment Program*, permit applications, permits and effluent data shall not be considered confidential.

J. Oil and Hazardous Substance Liability. Nothing in this permit shall be construed to preclude the permittee of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under the *Pretreatment Program.*

K. Property Rights. The issuance of this permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

L. Severability. The provisions of this permit are severable, and if any provisions of this permit, or the application of any provision of this permit to any circumstance, are held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

M. Transfers. This permit may be automatically transferred to a new permittee if:

1. The current permittee notified the General Manager at least 20 days in advance of the proposed transfer date;

2. The notice includes a written agreement between the existing and new permittees containing a specific date for transfer of permit responsibility, coverage, and liability between them; and,

3. The General Manager does not notify the existing permittee and the proposed new permittee of his or her intent to modify, or revoke and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in paragraph 2 above.

N. Laws. Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable regulation under authority preserved by SBWRD through the Pretreatment Program.

O. Spill Control Plan. Permittee must provide a copy of current spill control management plan describing in detail said plan. If no plan is available, a spill control management plan will be required to be developed.

APPENDIX L

Existing Site Photos

Figure 1 - Judge Tunnel Portal

Figure 2 - Overflow and Tank

Figure 3 - Pipe Alignment North of Existing Tank

Figure 4 - Pipe Alignment through Aspen Grove

Figure 5 - Alignment within Roadway

Figure 6 - Silver Creek at Deer Valley

APPENDIX M

Threatened and Endangered Species

Canyon Environmental, LLC

Canyon Environmental
770 E 2550 N
Provo, UT 84604
Phone: 801.602.6883 Fax: 801.341.0005
www.canyonenvironmental.com

September 24, 2010

Jamie Tsandes
Bowen Collins & Associates
154 East 14000 South
Draper, Utah 84020
(801) 495-2224 phone
(801) 495-2225 fax

Subject: Biological Evaluation of the Proposed Park City Judge Tunnel Water Development Project

Dear Ms. Tsandes:

At your request, Canyon Environmental conducted a preliminary T&E Species evaluation for the proposed Judge Tunnel Project in Park City, Utah. Prior to conducting a field visit, we collected general ancillary information regarding the presence of Federally threatened and/or endangered species that could be impacted by the proposed action. Additionally, we catalogued a general plant list of shrub, forbs, and grass species observed within the project corridor. Please note, that this plant species is not to be construed as a complete list, rather a general assessment of plant resources in the area. As such, we offer the following conclusions and recommendations:

1- Due to potential impacts to nesting habitat for woodpecker species and goshawk (as well as other avian species), we recommend that a preconstruction survey be conducted in the spring to ensure that the proposed project does not have a detrimental effect to migratory birds that may be nesting in or around impacted areas. In the event that breeding pairs or nests containing eggs and/or juveniles are encountered, we recommend that construction activities shift to other locations along the project corridor until nesting birds have fled the nest.

2- Special consideration should be given to areas that are located within or adjacent to riparian areas. Construction crews and equipment should be contained within designated project areas so as to avoid any potential impacts to wetland areas and the associated species that may exist in those areas.

3- Due to the inconsistent nature of the stream flow emanating from the Judge Tunnel overflow valve, we conclude that the proposed project is not expected to have a significant effect on aquatic species. The intermittent flow resulting from discharge does not appear to have resulted in the development of sufficient habitat for aquatic species to develop.

4- Due to the possibility of nesting species being located within undeveloped, mixed-conifer, forested areas of the project, Canyon Environmental recommends that construction activities be contained within designated areas to avoid unnecessary impacts to large diameter, mature trees and heavily forested areas within the corridor. It is recommended that project planning be implemented to ensure that properly-sized equipment is used in forested areas to avoid damage to mature trees and to limit damage to trails and other areas.

5- Invasive weeds were observed in areas of the proposed project corridor. Due to the potential impacts resulting from excavation and burial of a water line, Canyon Environmental recommends the following measure to mitigate the potential effects of invasive weed expansion into the proposed corridor:

   a. Limit construction activities in native forest areas to only necessary equipment and where possible, to use smaller-sized heavy equipment that would result in a less significant impact to the existing vegetation.
   b. Ensure that construction equipment and materials are "weed free" and maintained in that condition to ensure that invasive weeds do not spread from one area to another along the project corridor.
   c. Develop a plan to ensure that disturbed areas are re-seeded and/or redeveloped to ensure that non-native species do not spread into unwanted areas.
   d. Develop a six-month to one-year monitoring/treatment plan to ensure that invasive species have not impacted the project area. In the event that invasive plant species are found to have expanded into other areas, treatment should be undertaken immediately to ensure that weeds do not spread to un-infected areas of the corridor.

Pleas review the above conclusions and recommendations and do not hesitate to contact me if you should have any additional questions.

Sincerely,

Chris Jensen
Director
Canyon Environmental
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cjensen@ccanyonenvironmental.com

APPENDIX N

Silver Maple Claims Water Source Evaluation Technical Memo

TECHNICAL MEMORANDUM

TO: Clint McAffee, P.E.
Water Manager
Park City Municipal Corporation
1053 Iron Horse Drive
Park City, Utah 84060

COPIES: Tena Campbell, BC&A
File

FROM: Jon Oldham P.E. / Jamie Tsandes, PLA
Bowen, Collins & Associates
154 East 14000 South
Draper, Utah 84020

DATE: July 6, 2012

SUBJECT: Silver Maple Claims Water Source Evaluation

INTRODUCTION

Bowen, Collins and Associates (BC&A) was retained by Park City Municipal Corporation (PCMC) to evaluate the existing Judge Tunnel flows and recommend how much water should be released from the Pace Homer Ditch to replace the base flow of water historically released from Judge Tunnel to Empire Creek. Empire Creek is an ephemeral tributary stream to Silver Creek, where the Silver Maple Claim wetlands are located. This effort is in response to PCMC's desire to capture the entire Judge Tunnel flow, which would prevent tunnel water from flowing into Empire Creek and eventually to Silver Maple Claim wetlands.

THE JUDGE TUNNEL WATER SOURCE

Judge Tunnel water is currently captured at the tunnel portal and taken into an existing water tank located a few hundred yards northeast of the portal. This water is an important existing drinking water source for the PCMC water system. Although PCMC has a water right which allows the City to capture and use this water, there are several existing scenarios when PCMC is not able to use the water. In these scenarios the Judge Tunnel water is discharged into Empire

Creek, which eventually connects to Silver Creek and Silver Maple Claims Wetlands. The discharge is not natural, and is sporadic in frequency and duration.

The first and most common discharge scenario is when the water exiting the portal becomes too turbid due to disturbance within the tunnel. This occurs whenever water system maintenance personnel, mine workers, and others enter the tunnel to collect water samples and perform tunnel maintenance. There are also random turbidity spikes that can occur throughout the year. When the water is too turbid to take directly into the PCMC water system, it is discharged into Empire Creek.

The second scenario for discharge to Empire Creek occurs typically at seasonal high run off. Water exiting the tunnel becomes too turbid with higher flows, and it cannot be used in the PCMC system. This was experienced most dramatically in 2005, which had the recent peak flow on record from Judge Tunnel. The timing of these higher flows, when the water is discharged to the creek, is not consistent year to year, and varies from March to July.

The third and less frequent scenario occurs when the flows from Judge Tunnel exceed the capacity in the PCMC water system, and the flow is diverted to Empire Creek.

Figure 1 illustrates how the frequency of daily flows from Judge Tunnel to Empire Creek is positively skewed with the greatest frequency of days having no flow or lower flows on the left side of the graph. During more than 32% of the days (977 of 3,037) in the period of record, no flow was discharged from Judge Tunnel to Empire Creek. Over 44.5% of the days (1,352 of 3,307) had zero flow or flows less than 0.1 cubic foot per second (CFS), or 45 gallons per minute (GPM).

With such a significantly skewed distribution of daily flows, a median flow is a useful indicator of typical base flow values. The median daily flow for this period of record is 0.15 CFS and is shown on Figure 1. This value indicates that since 2004, 50% of the recorded daily flows have been less than 0.15 CFS, and 50% of the recorded daily flows have been greater than 0.15 CFS.

The actual flow from Judge Tunnel that reaches the Silver Maple Claims Wetlands is difficult to quantify, as the discharged water flows through unlined dry stream beds for portions of the year. Quantifying stream losses in Empire Creek and subsequent downstream waterways is beyond the scope of this memo, and is complicated by a variety of factors including soil types, temperatures (evaporation), and stream vegetation, which all affect losses. On one third of the days since 2004, no flow was discharged from Judge Tunnel to Empire Creek. Discharging into a dry stream bed would effectively increase the seepage/infiltration losses, as the stream bed would seep up to 100% of the flow until it becomes saturated, and a portion of the flow after it becomes fully saturated.

By comparison, seepage losses in unlined ditches and canals vary greatly with typical losses ranging from $0.2ft^3/ft^2/day$ to $6ft^3/ft^2/day$ (shown in Figure 2) as a function of soil types in the bed. Seepage losses of 20% to 50% are common. Assuming a conservative (low side) Empire Creek seepage value of $2ft^3/ft^2/day$ (sand and gravelly sandy loam soil type), and a stream bed wetted area of only $8ft^2$, the estimated seepage losses would be 0.12 CFS, or 80% of recorded

median flow. This is for saturated conditions, which is often not the case for Empire Creek. As a simplified approach, a conservative (on the low side) estimate of 20% loss in flow from the point of discharge in Empire Creek to the Silver Maple Claims wetlands is assumed.

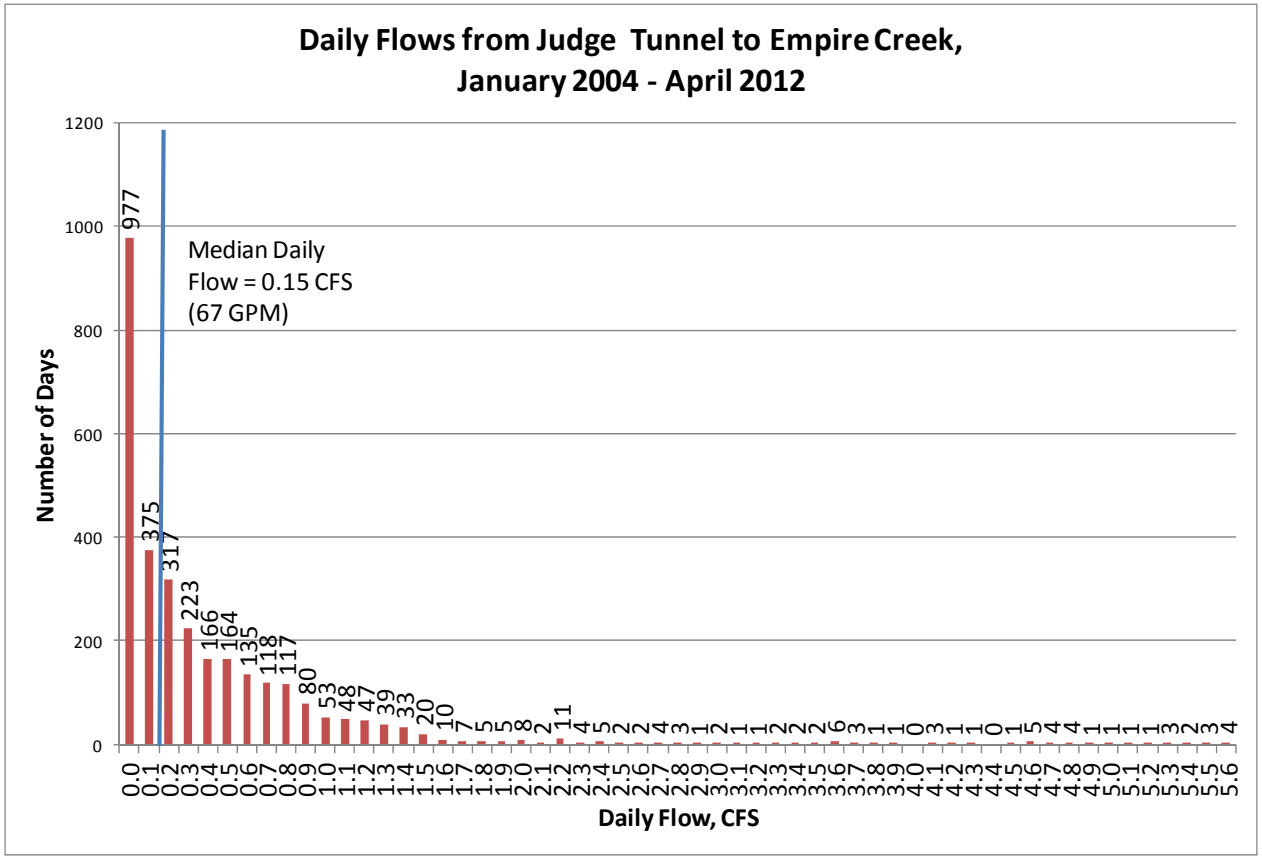

Figure 1. Histogram of Daily Flows from Judge Tunnel to Empire Creek.

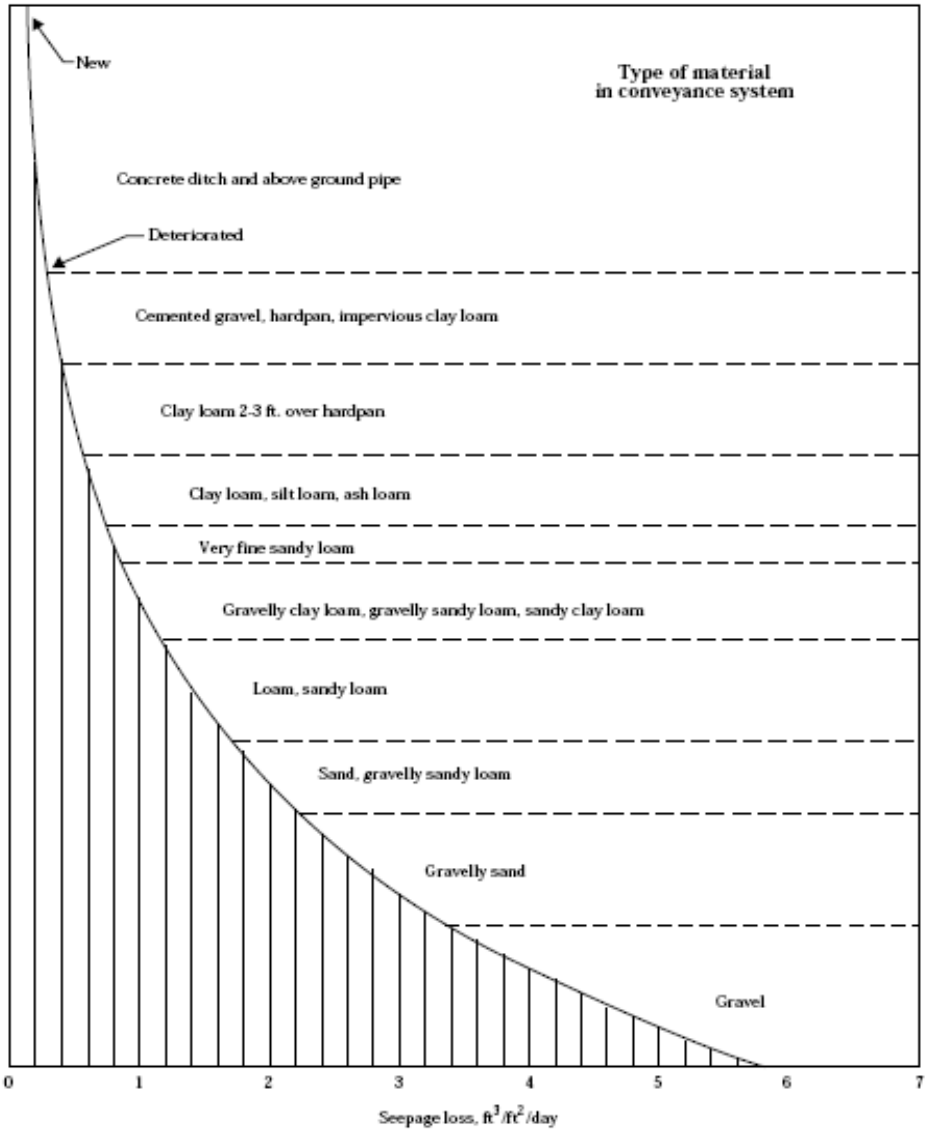

Figure 2. Method to Estimate Seepage Losses From Irrigation Delivery Systems (US Department of Agriculture Part 623 National Engineering Handbook, September 1993, Figure 2-50)

PACE HOMER DITCH

The Pace Homer Ditch is primarily used to convey PCMC irrigation water for downstream users and maintains its historic location as an open canal. Today, the canal is primarily piped but located within a similar alignment as historically shown. Figure 3 is an aerial from 1938 showing the historic path of the ditch prior to the construction of SR-248 followed by a Figure 4, a 2012 Google Map image of the area as it currently functions. There are no apparent wetlands in the Silver Maple Claims area in the 1938 aerial (Figure 3).

Figure 3. 1938 -- USDA Aerial Photograph of Pace Homer Ditch

Figure 4. 2012 -- Google Earth Map of Pace Homer Ditch

The Pace Homer Ditch is a water source that has historically paralleled the Silver Maple Claims Wetlands and is a viable alternate source of water for the wetlands. It can be discharged into the wetland area as a steady water source to mitigate the unpredictable water source from Judge Tunnel.

SUMMARY AND RECOMMENDATIONS

In evaluating the Judge Tunnel flows, BC&A recommends using the median daily flow minus estimated losses for the period of record as the baseline for augmenting the Silver Maple Wetlands. Additionally, the primary growing season in the wetlands would be expected to occur in April to October. Based on the heavy snow fall and freezing temperatures in Park City, it is not necessary to discharge additional water for the wetlands during the winter months.

Median Daily Flow (CFS) from Judge Tunnel	Estimated Losses in Empire Creek and Downstream Stream Beds (CFS)	Recommended Daily Baseline Flow to Augment Wetlands (CFS)	Recommended Duration
0.15	(20%) 0.03	0.12	April to October (7 months)

This recommendation is based on taking a manmade, sporadic, unpredictable turbid flow from Judge Tunnel and exchanging it for a reliable steady flow from an alternate water source, Pace Homer Ditch. We recommend that PCMC discharge 0.12 CFS or 54 GPM from April to October into the Silver Maple Claims Wetlands each year the wetlands remain in existence to compensate for the diversion of historical base flows from Judge Tunnel.

APPENDIX O

USFWS Silver Maple Claims Water Source Mitigation Agreement

Silver Maple Claims Wetlands Mitigation Plan

The following mitigation plan was prepared by Park City Municipal Corporation in cooperation with the U.S. Fish and Wildlife Service (FWS) and Bureau of Land Management (BLM). The purpose of the plan is to outline mitigation measures due to the flow reduction into Silver Maple Claims Wetlands (SMC) as a result of the Judge Tunnel water line project.

Flow Calculation

Park City's initial proposal was to replace water Judge Tunnel has historically contributed to SMC with a steady flow of 0.12 cubic feet per second (cfs) with an existing connection from an existing irrigation ditch above SMC. This amount is based on the median historical contribution from Judge Tunnel minus an agreed upon 20% to account for evaporation and infiltration losses that occur between the current Judge Tunnel discharge location and SMC.

FWS noted that the flow proposed by Park City to replace water Judge Tunnel has historically contributed did not match the actual historical contribution as was indicated in the draft EA. FWS indicated that an acceptable replacement amount should be more similar to the historical mean amount. FWS also indicated that the time period for replacement should be April through October of each year.

Due to the unique characteristics of the Judge Tunnel source and its contribution to SMC, FWS and Park City have agreed that a combination of the two approaches would be the best way to establish a replacement amount. It also has been agreed that one number would not represent the historical contribution from Judge Tunnel between April and October. In addition to the annual mean and median amounts of water contributed to SMC by Judge Tunnel, historical monthly data must be considered to ensure a representative replacement. Judge Tunnel's contribution to SMC is random and unpredictable on a day to day basis but when looked at on a monthly basis, general seasonal trends can be seen which are similar to surface water runoff patterns. This peak in flow from Judge Tunnel is generally lagging peak surface runoff by about 30 days.

Table 1 below represents mean and median flows from the portion of Judge Tunnel flow that has historically contributed to SMC minus 20% to account for evaporation and infiltration losses that are estimated to occur between Judge Tunnel and SMC. Considering this information, Park City and FWS have agreed on three normal operating flow scenarios for the period of March through October which are described below. FWS and Park City have agreed mitigation to the SMC for

the period of November through February will not be required as SMC is generally inundated with water during this time and does not need additional water.

The three flow scenarios are as follows:

1. Park City will divert from the irrigation ditch the high (mean) amounts shown in Table 1 below for each month, March through October. This will occur most of the time as Park City generally has surplus water quantity in the amounts shown above. The amount shown will not be the constant flow rate; rather the flow from the irrigation ditch into SMC will be such that the average over a month will match that high (mean) shown in Table 1 below.
2. Park City will divert from the irrigation ditch no less than the low (median) amount shown in Table 1 below for each month, March through October. This scenario will occur during drought periods as measured by the Palmer Drought Severity Index (PDSI) for the Northern Mountain Climate Division for Utah or when the City's sources are well below average and surplus water is not available. The PDSI shall be obtained from the National Oceanic and Atmospheric Administration Climate Prediction Center website or similar reputable source and the flow scenario will be determined based on the index score per Table 2 below. Under these drought conditions, the amount shown will not be the constant flow rate; rather the flow from the irrigation ditch into SMC will be such that the average over a month will match that shown in Table 1 below.
3. The two scenarios above would apply when Park City is taking all of Judge Tunnel water into the City's water system all of the time. If turbid or excess Judge Tunnel water is being diverted into Empire Creek and not being diverted into the City's distribution system, similar to current operations, no mitigation will be required during any month provided that the average discharge from Judge Tunnel into Empire Creek over the course of a month is equal to or greater to the values shown in Table 1 below per the flow scenario shown in Table 2 below.

Table 1 - Proposed Average Monthly Flow (cubic feet per second)

	March	April	May	June	July	August	September	October
High (mean)	0.25	0.34	0.49	0.36	0.19	0.15	0.17	0.28
Low (median)	0.06	0.25	0.29	0.14	0.05	0.00	0.07	0.28

Table 2 - Flow scenarios as they relate to the Palmer Drought Severity Index (PDSI)

PDSI Category	Index Score	Flow Scenario
Extremely Moist	4.00 and above	High (mean)
Very Moist	3.00 to 3.99	High (mean)
Moderately Moist	2.00 to 2.99	High (mean)
Mid-Range	-1.99 to 1.99	High (mean)
Moderate Drought	-2.00 to -2.99	Low (median)
Severe Drought	-3.00 to -3.99	Low (median)
Extreme Drought	-4.00 and below	Low (median)

Water Rights and Conveyance

The infrastructure required for the SMC mitigation is already in place, aside from a flow control valve and meter which will be installed once Judge Tunnel water is diverted, and is subject to Park City's jurisdiction and control. This infrastructure includes and existing irrigation ditch and a pipe from the ditch to SMC. A new flow control valve, flow meter, and all necessary equipment will be installed to control and record the flow into SMC per this mitigation plan. The flow will be recorded on a continuous basis during the mitigation period and monthly reports will be kept and made available upon request.

Park City has various water rights and water sources available to divert water to the irrigation ditch. The irrigation ditch and Silver Creek will receive water from the above-referenced water rights and water sources. The irrigation ditch originates in the Park Meadows subdivision and runs downstream to where it is parallel to and upland from SMC and Silver Creek. The water in the irrigation ditch converges with Silver Creek approximately 400 feet below the Quinns Junction Water Treatment Plant. Currently, the next point at which water is diverted from Silver Creek is approximately three miles downstream of the confluence of the irrigation ditch and Silver Creek. As a result of the lack of intervening water users, diverting water from the irrigation ditch will not interfere with other water users.

Water Quality

In August 2012, Park City sent water quality sample results to FWS which included temperature and various other test results. FWS and Park City have discussed these water quality results and FWS indicated there is no concern with the quality of water in the irrigation ditch and it is suitable to enter SMC.

Long-Term Contingency Plan

Due to the nature of Park City's water sources, Park City has adopted a definition of adequate water supply that includes enough wet water for build out demands plus a surplus of about 20%. The surplus is necessary to ensure adequate water in the event of source failure. Park City

currently has eight drinking water sources including three wells, two mine tunnels, one spring and two import sources. Various common failures can occur that would temporarily stop production from these sources including power interruption, mechanical failure, water quality, or other unforeseen upsets. Under normal circumstances, Park City will have the surplus capacity to meet the mitigation flows in the table shown above. In the event of a source failure, however, Park City must maintain the ability to ensure it meets drinking water needs before mitigation flows are sent to SMC.

Mitigation Agreement and Terms

Park City intends to effectuate flows as set forth in Table 1 above. Park City's capacity to provide the flows set forth in Table 1 shall be subordinate to Park City's obligation to provide emergency water, fire suppression water, culinary water, irrigation water, and water in fulfillment of water delivery obligations and water rights requirements. Park City retains the discretion to revisit this agreement with Federal Agencies.