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Andrew Hummel, P.E.
City of Sparks
Community Services Department
431 Prater Way
Sparks, Nevada 89431

**Re: 2013 Rock Park Monitoring and Reporting
JBR Project Number B.A11484.00**

Dear Mr. Hummel:

JBR Environmental Consultants, Inc. (JBR) appreciates the opportunity to provide this proposal to the City of Sparks (the City) for the Rock Whitewater Park (the Park) 2013 data collection monitoring and associated reporting. The tasks proposed within this scope-of-work are based on the Rock Whitewater Park Monitoring and Reporting Plan (Revised 2013), dated April 1, 2013. This monitoring and reporting plan, which includes the new monitoring schedule, was submitted to the Nevada Department of Wildlife (NDOW), the United States Fish and Wildlife Service (USFWS), and the United States Army Corps of Engineers (USACE) for review and acceptance. On July 26, 2013, NDOW emailed to JBR an approval of the monitoring schedule. There has been no response from either the USACE or the USFWS; JBR assumes for this proposal that these two agencies agree with the proposed monitoring schedule.

Provided below is a description of each proposed task, the associated deliverable, and a summary of the estimated costs. Ultimately, the final deliverable to the City of Sparks will be the 2013 Annual Monitoring Report which will include a compilation of the data collected during the tasks described below. The data for each task will be available as a separate dataset/deliverable if requested.

SCOPE-OF-WORK

Task 1 - Structural Stability Assessment (Five Drop Structures)

Structural stability will be evaluated for the five drop structures both above and below the water surface using photographic documentation, visual inspections, and snorkel surveys. Each of the five in-stream structures will be inspected for cracks, erosion, water piping, and other stability flaws. Underwater photopoints have been established for seasonal and annual comparisons. Each structure will be evaluated at the center of flow directly upstream and downstream of the drop structure, and at two locations on each side of the center of flow representing the left and right wings and outer fringe of the structure.

Deliverable

The structural stability dataset will include photographic documentation of stability flaws, a list of areas requiring additional monitoring for stability, a narrative of their status, and

recommendations for areas that have changed and could potentially affect hydraulic performance. This information will be included in the Annual Monitoring Report.

Task 2 - Sediment Debris and Transport Assessment (Substrate Composition Analysis)

The sediment and debris transport efficiency will be conducted by using the channel substrate composition assessment. Photographs of the river bottom, with the gravelometer for measurement reference purposes, will be taken from 100 randomly established survey locations throughout the project area. The substrate observed in each photograph will be assessed for indicators of habitat quality (i.e. available interstitial spaces for benthic microinvertebrate establishment, and available gravel quantities adequate for fish spawning).

Deliverable

The sediment and debris transport assessment deliverable will include a series of photographs taken at each survey location and a narrative of the findings which will be included in the Annual Monitoring Report.

Task 3 – Assessment of Bank Erosion at the S-5 Drop Structure

A bank erosion assessment will be performed at the S-5 Drop Structure using the Pfankuch Channel Assessment Protocol (Pfankuch, 1975). A Pfankuch Channel Assessment evaluates the stability and overall potential for erosion of a cross-sectional portion of stream reach. This assessment evaluates bank stability, suitability for vegetation establishment, sediment composition, and cross-sectional channel area. A score is assigned to each assessed location, allowing for a straightforward year-to-year comparison of the overall erosion occurring at any given location.

Deliverable

The bank erosion dataset/deliverable will include the completed Pfankuch's field data sheets and narrative detailing observed changes in bank stability and migration for incorporation into the Annual Monitoring Report.

Task 4 – Monitoring of Fish Passage – Physical

Physical monitoring for fish passage will be conducted during Truckee River flows of 250 cubic feet per second (cfs) or less. Data will be collected through velocity profile assessments. An Acoustic-Doppler Current Profiler will be utilized for this effort in order to provide accurate high-resolution velocity measurements at each drop structure location.

The velocity profiles of the five drop structures will be assessed for potential passage windows for juvenile mountain whitefish (velocities of two feet per second or less in water depths of four inches or greater). The velocity profiles will be compared to the Fish Passage – Biological monitoring results to further evaluate passability or impassability. Velocity profile results will also be compared to the data collected in 2011 and 2012 under higher flow regimes to assess which flow regimes (if any) are likely to be problematic for fish passage.

Deliverable

The data gathered during the velocity profiling monitoring will be presented in graphical format, showing the transect cross-section with all discrete velocity measurements collected throughout

the water column. A narrative detailing the monitoring results will be included in the Annual Monitoring Report, and all digital data will be provided on a compact disc.

Task 5 – Monitoring of Fish Passage – Biological

Biological monitoring of fish passage will use Radio Frequency Identification (RFID) antennas, receivers, and Passive Integrated Transmission (PIT) tags. Approximately 120 fish will be captured through electro-fishing practices upstream of the project area. Following their capture, fish will be transported to the Park in an oxygenated polyethylene tank. The fish will be temporarily held in perforated plastic bins placed in the river to allow the fish to recover from electro-fishing and transport-induced stress, before being tagged and released for monitoring.

Fish will be tagged with 12.5-millimeter, 134.2-kilohertz PIT tags. The species of each fish, their length (measured from snout to fork), and their PIT tag identification will be recorded. Fish will then be randomly placed into three groups, and released at three different points within the project area to assess the fish's ability to travel upstream.

Prior to releasing the tagged fish, RFID antennas will be placed at specific cross-sections within the Park. Installation of the RFID antennae will consist of anchoring each series to the channel bottom with cinder blocks. The antennae will be powered by solar panels, and the receivers will be connected to the RFID antenna series with receiver cables for transmitting detections.

Fish movements are planned to be monitored for a duration of two months. The fish passage data will be downloaded weekly and/or following significant precipitation events.

It is assumed that JBR will be able to use NDOW equipment for the electro-fishing exercise.

Deliverable

The biological monitoring dataset/deliverable will include the recorded field data (fish species, length, PIT tag identification code, and release location), monitoring results, and the passage results. A narrative detailing the monitoring results will be included in the Annual Monitoring Report.

Task 6 - Annual Report

The data collected during Tasks 1-5 will be compiled in the 2013 Annual Monitoring Report. This report will be provided to the City in Final Draft format for review. JBR will incorporate any edits and will submit the Final Draft to the Monitoring Oversight Group (MOG). JBR will incorporate any edits from the MOG and will finalize the 2013 Annual Monitoring Report. The 2013 Annual Report is due to the MOG on January 1, 2014.

Task 7 - On-Call Monitoring for Flood Events

Directly following a flood event (flows of 6,000 cfs or greater), the Monitoring Tasks in Table 1 must be conducted:

Table 1 Monitoring Tasks

Monitoring Task	Sample Type
Structure Stability Assessment (five drop structures)	Snorkel, Photographic, and Visual
Aggradation of Bed Load Evaluation	Point Elevation Surveys
Evaluation of Flood Flows	Point Elevation Surveys and Pfankuch Method
Sediment and Debris Transport Assessment	Point Elevation Surveys and Substrate Composition Analysis
Assessment of Bank Erosion	Pfankuch Method and Point Elevation Survey
Aquatic Habitat Evaluation	Compilation of data: Aggradation of Bed Loads, Sediment and Debris Transport, and Bank Erosion

JBR has assumed that there will be one flood event this winter. The above tasks will be performed and the results will be summarized into a letter report.

SCHEDULE AND COST ESTIMATE

JBR's cost estimate to complete this work is \$150,535.00 as shown in Table 2. Mileage and equipment costs are included in this estimated cost. The cost estimate is based on JBR's understanding of the project and our scope-of-work as described herein. JBR's cost estimate is on a time-and-materials basis and assumes JBR's 2013 professional rates.

Table 2 Estimated Costs

Task	Estimated Cost
Task 1: Structural Stability Assessment (Five Drop Structures)	\$10,735
Task 2: Sediment Debris and Transport Assessment (Substrate Composition Analysis)	\$12,150
Task 3: Assessment of Bank Erosion (S-5)	\$1,375
Task 4: Monitoring of Fish Passage – Physical	\$15,960
Task 5: Monitoring of Fish Passage – Biological	\$49,580
Task 6: Annual Report	\$19,800
Task 7: On-Call Monitoring for Flood Events	\$40,935
Total:	\$150,535

JBR appreciates the opportunity to provide this scope-of-work and cost estimate to the City. If you have any questions, please do not hesitate to contact me at (775) 747-5777.

Sincerely,

JBR ENVIRONMENTAL CONSULTANTS, INC.



Debra Lemke, PWS, CPESC
Supervisor/Project Manager