City of Ketchum

CITY COUNCIL MEETING AGENDA MEMO

Meeting Date:	4/1/2024	Staff Member/Dept:	Mick Mummert/Wastewater Division

Agenda Item: Recommendation to Approve Purchase Order #24075 with HDR Engineering for Reuse Lagoon Seepage Testing

Recommended Motion:

I move to approve Purchase Order #24075 with HDR Engineering for Weyyakin Reuse Storage Pond Seepage Testing.

Reasons for Recommendation:

- IDEQ requires seepage testing of the lined reuse storage pond every ten (10) years.
- Previous testing done in October 2023 was deemed inconclusive by DEQ.
- HDR has a Master Services Agreement with the City of Ketchum for Engineering Services.

Policy Analysis and Background (non-consent items only):

Sustainability Impact:

None OR state impact here: Utilizing reuse water for irrigation reduces the amount of water being pumped from the aquifer.

Financial Impact:

None OR Adequate funds exist in account:	This is a budgeted expense in the professional services category of the Wastewater Expenditures.

Attachments:

1. Purchase Order #24075
2. HDR Task Order #4
3. Weyyakin Pond – Seepage Test Report Inconclusive Results from DEQ

CITY OF KETCHUM

PO BOX 2315 * 191 5TH ST. * KETCHUM, ID 83340
Administration 208-726-3841 (fax) 208-726-8234

PURCHASE ORDER

BUDGETED ITEM? ____ Yes ____ No

PURCHASE ORDER - NUMBER: 24075

To:	**Ship to:**
2319 HDR ENGINEERING, INC. BOX 74008202 CHICAGO IL 60674-8202	CITY OF KETCHUM PO BOX 2315 KETCHUM ID 83340

P. O. Date	Created By	Requested By	Department	Req Number	Terms
03/26/2024	BANCONA	BANCONA	Utilities/Wastewater	0	

Quantity	Description	Unit Price	Total
1.00	TASK ORDER #4 SEEPAGE TESTING-WEYYA 65-4350-4200	11,300.00	11,300.00
	SHIPPING & HANDLING		0.00
	TOTAL PO AMOUNT		11,300.00

Authorized Signature

TASK ORDER

This Task Order pertains to an Agreement by and between the City of Ketchum, ID/Sun Valley Water & Sewer District, Sun Valley, ID, ("OWNER" or "OWNERS"), and HDR Engineering, Inc. ("ENGINEER"), dated May 1, 2023, ("the Agreement"). Engineer shall perform services on the project described below as provided herein and in the Agreement. This Task Order shall not be binding until it has been properly signed by all parties. Upon execution, this Task Order shall supplement the Agreement as it pertains to the project described below.

TASK ORDER NUMBER: 4

PROJECT NAME: Seepage Testing – Weyyakin Storage Pond

PART 1.0 PROJECT DESCRIPTION: See attached proposal dated January 17, 2024

PART 2.0 SCOPE OF SERVICES TO BE PERFORMED BY ENGINEER ON THE PROJECT: See attached proposal dated January 17, 2024

PART 3.0 OWNER'S RESPONSIBILITIES: See attached proposal dated January 17, 2024

PART 4.0 PERIODS OF SERVICE: See attached proposal dated January 17, 2024

PART 5.0 ENGINEER'S FEE: See attached proposal dated January 17, 2024

PART 6.0 OTHER:

This Task Order is executed this _____ day of _____, 2024.

CITY OF KETCHUM, ID "OWNER"		**HDR ENGINEERING, INC. "ENGINEER"**	
BY:	_____	**BY:**	_____
NAME:	Neil Bradshaw	**NAME:**	Robert R. Hardgrove
TITLE:	Mayor	**TITLE:**	Vice President
ADDRESS:	City of Ketchum P.O. Box 2315 (191 5th St. W.) Ketchum, ID 83340	**ADDRESS:**	412 E. Parkcenter Blvd, Suite 100 Boise, ID 83706

January 17, 2024

Mick Mummert
City of Ketchum
P.O. Box 2315
Ketchum, ID 83340

Via email: mmummert@ketchumidaho.org

Subject: Scope of Work and Cost Proposal for Seepage Testing of Weyyakin Storage Pond Class A Reuse Water from Ketchum/SVWSD

Dear Mr. Mummert:

HDR Engineering, Inc. (HDR) is pleased to submit the following proposal for lined pond seepage testing for the Weyyakin Development receiving the City of Ketchum/Sun Valley Water & Sewer District Class A reuse water.

BACKGROUND

Ketchum contracted with HDR to conduct a seepage test of the Weyyakin Pond in 2023. Unfortunately, due to inclement weather and unforeseen issues that led to the Weyyakin pond being surcharged above a normal operating depth, the seepage test was deemed inconclusive. Ketchum has requested a proposal for seepage testing of the lined Weyyakin reuse storage pond again in 2024. HDR proposes the following approach to meeting IDEQ seepage testing requirements for the lagoon, which are set forth by IDAPA 58.01.16.493.

SCOPE OF WORK

IDEQ requires that seepage tests be conducted on lagoons that are hydraulically isolated (zero inflow or outflow). The Weyyakin reuse water supply must be closed and the circulation/irrigation pumps shut off. HDR proposes to schedule testing for the Weyyakin storage pond in October 2024 after the irrigation season.

Task 1. Submit Seepage Test Procedure

Idaho Wastewater Rules (IDAPA 58.01.16.493) requires existing lined lagoons constructed prior to April 15, 2007 do not leak at a rate greater than 1/4 inch (0.25 inches) per day at a 95% confidence interval. We understand the pond to be tested was constructed prior to this date. Per these requirements, HDR will submit a proposed combined Seepage Test Procedure (STP) to Idaho Department of Environmental Quality (IDEQ). The STP must be approved by IDEQ prior to commencing the lagoon testing. In May of 2024, HDR will meet on site with the City of Ketchum/Weyyakin to develop a plan to ensure proper isolation of the Weyyakin Pond during the October

seepage test. This plan will be incorporated into the STP to be submitted to IDEQ for their approval.

Task 2. Weyyakin Storage Pond Seepage Testing

Once the Weyyakin storage pond is filled to its design high water level, HDR will begin the seepage testing. The seepage test involves measuring and recording the water level in the pond over the course of several days and collecting weather data at the site. The data are then used to correct for evaporative losses and calculate the estimated loss in the lagoon due to leakage. In general, the seepage test consists of the following steps:

- Implement steps to ensure proper isolation of the Weyyakin Pond during seepage testing (performed by the City of Ketchum/Weyyakin).
- Fill the Weyyakin storage pond to the design high water level (performed by the City of Ketchum/Weyyakin).
- Perform seepage test over several days by remotely measuring evaporation, precipitation, wind, water levels in the lagoon and in a 48-in diameter evaporation pan (equipment provided by HDR) via cellular telemetry.
- Perform daily statistical analysis to demonstrate enough data points have been collected to achieve a 95% confidence interval associated with the calculated seepage rate.
- Summarize seepage test results in a report and submit to IDEQ.
- IDEQ approval of leak test report for the Weyyakin storage pond, resume normal Weyyakin storage pond operations.

A properly constructed HDPE liner would generally be expected to meet the IDEQ seepage requirements. But occasionally damage occurs and repairs are required. In the event the seepage rate is found to exceed 1/4-in per day, the lagoon would need to be retested. Re-testing costs will consider if testing equipment can be retained on-site or a complete new mobilization performed at a later time.

The number of days required to perform the test depends on two factors:

1. Favorable weather - If HDR encounters a day with sustained wind speeds greater than 9 mph, excessive precipitation (either in amount or number of days with precipitation), or freezing temperatures, the testing will need to be extended to collect additional data during favorable weather.
2. Real-time results – The number of days of testing required to demonstrate that the seepage limit is less than 1/4-inch per day with a confidence interval of 95% is a statistical exercise. In general, the closer the measured seepage rate is to the regulatory limit, the more samples (testing days) are needed to prove the limit has not been exceeded. With a properly constructed liner and favorable weather, it should be feasible to meet the statistical requirements in 3 - 6 days.

However, based on 2023 seepage testing efforts, HDR is planning to continue the 2024 seepage test for up to 14 days.

Additional days due to weather disruption, or to meet statistical requirements, if required, would cost an additional $300 per day. HDR will keep Weyyakin/City of Ketchum up to date on the progress of testing and notify each in advance if it appears additional days are needed and an estimate of the number of added days.

HDR RESPONSIBILITIES

HDR will be responsible for the following:

- Meet onsite in May of 2024 with the City of Ketchum/Weyyakin to develop/review a plan that will ensure proper isolation of the Weyyakin Pond during seepage testing.
- Provide weather and water level monitoring instrumentation
- Preparation of STP and submittal to IDEQ
- Processing and analyzing continuously recorded data via cellular telemetry
- Preparation and submittal of seepage test reports to IDEQ and the City of Ketchum (See Deliverables, below)
- Coordination to schedule the seepage tests

DELIVERABLES

The following schedule of deliverables reflects our projected level of effort and documentation requirements for permitting and field work (see Table 1).

Table 1. Schedule of Deliverables

Item No.	Description/Drawing	Document Type	Estimated Sheets/Pages
Task 1	SEEPAGE TESTING PROCEDURE	PDF	45
Task 2	IDEQ REPORT FOR WEYYAKIN POND	PDF	65

ASSUMPTIONS

HDR's proposed scope is based on the following assumptions:

- The City of Ketchum will be responsible for filling the pond prior to testing.
- The Owner will be responsible for hydraulically isolating the pond prior to testing.
- IDEQ approval of Seepage Testing Procedure.
- HDR will address one round of review comments from IDEQ and the City of Ketchum for the reports submitted.
- Cellular telemetry functions properly from the pond location and City personnel can do daily observations of equipment when testing.

SCOPE OF WORK EXCLUSIONS - NOT INCLUDED IN PROPOSAL

HDR's proposed scope of work does not include the following items:

- Hydraulically isolating the lagoons prior to testing
- Seepage re-testing
- Liner leak location survey
- Liner repairs
- Supplying water to or filling the lagoon
- Subsurface testing or investigation
- Additional testing days due to weather or other anomalies
- Additional site visits due to telemetry communication issues

If any of the services above are needed and not covered by others, they can be added to HDR's scope of work upon request.

SCHEDULE

The schedule for completing seepage testing of the Weyyakin storage pond is anticipated for early October 2024. It should be understood that IDEQ prefers lagoon testing be performed between June and the end of the September but will typically approve testing in October.

While it is not recommended to plan these tests in October, they typically can be accomplished in early October. HDR will coordinate to begin the seepage testing immediately following irrigation season (assumed to be September 30, 2024). HDR can schedule Task 1 upon receiving a signed task order. HDR will coordinate the scheduling of Task 2 immediately following the irrigation season. It should be noted that if the testing of the Weyyakin storage pond is delayed or in the absence of favorable weather in early October, the testing may have to be delayed until 2025.

ESTIMATED COSTS

HDR proposes to perform the scope of work on a lump sum basis, as detailed on the attached schedule of fees and conditions. Based on the tasks and deliverable schedule outlined above, we anticipate incurring costs for our services of $11,300. This fee is based on the work occurring in Summer/Fall of 2024.

Table 2. Engineering Fees

Task 1 – Submit combined STP to IDEQ		$ 3,000.00
Task 2 – Pond Testing and Report*		$ 8,300.00
	TOTAL	$ 11,300.00
Contingency Testing***		$ 300.00/day

** Assumes up to a 14-day testing program for the Weyyakin storage pond.*

****Data will be collected and checked daily for suitability throughout the testing period. A contingency testing amount of $300 per day will be charged on a lump sum basis should data analysis fail to meet statistical requirements, or due to weather disruption. Client will be notified of the daily checks in order to plan for additional days of testing should they be required.*

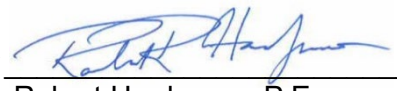
AGREEMENT

If this proposal meets with your approval, please sign the attached task order document. This signature will be considered as a notice to proceed with a fixed fee of $11,300.

Please return a signed copy of the task order to our office. We look forward to working with you on this project.

Respectfully submitted,

HDR ENGINEERING, INC

By 

Robert Hardgrove, P.E.
Vice President

Pete Vidmar, P.E.
Senior Project Engineer

1410 N Hilton Street
Boise, ID 83706 • (208) 373-0502

Brad Little, Governor
Jess Byrne, Director

December 12, 2023

Mick Mummert
City of Ketchum
PO Box 2315
Ketchum, Idaho 83340
mmummert@ketchumidaho.org

Subject: City of Ketchum, Weyyakin Pond – Seepage Test Report Inconclusive Results

Dear Mr. Mummert:

The Idaho Department of Environmental Quality (DEQ) received a seepage test report entitled *City of Ketchum; Weyyakin Pond; Seepage Rate Test; Ketchum, ID; October 18,2023* (Report). The Report is not signed and sealed by an Idaho Licensed professional engineer or an Idaho licensed professional geologist.

We have reviewed the Report for general conformance with DEQ Rules[1] and guidance.

The seepage test procedure submitted for Weyyakin Pond was approved by DEQ in a letter issued August 17, 2023. The lagoon was tested between October 4 and October 9, 2023. The maximum allowable seepage rate for this lagoon is 0.25 inch per day as specified in DEQ Rules. It is the responsibility of the lagoon owner to demonstrate through seepage testing that a lagoon is meeting this operating standard.

Based on the information submitted in the test report, the completeness metric cannot be met; the category metric cannot be evaluated conclusively; the consistency metric cannot be met; and the data quality metric cannot be met. In addition, the test was not conducted in accordance with the approved procedure. **Therefore, the seepage test for this lagoon is inconclusive, and you have not demonstrated compliance with the operating standard referenced in the previous paragraph.**

To demonstrate compliance with the operating standard, the lagoon will need to be retested and a new test report submitted to DEQ. Please submit to DEQ for review and approval a seepage test procedure and schedule for re-testing the lagoon.

The following website will have resources to assist with the testing:

[1] IDAPA 58.01.16 – Wastewater Rules

https://www.deq.idaho.gov/water-quality/wastewater/wastewater-treatment-and-collections/

Please note DEQ reviewed the report following the multi-metric approach outlined in the *Wastewater Lagoon Seepage Test Statistical Review* (October 2011). This document can be found at:

https://www2.deq.idaho.gov/admin/LEIA/api/document/download/5944

DEQ identified the following issue with the seepage rate test.

- **Procedure Not Followed**

  The August 17, 2023 seepage test approval letter indicates any deviation from the Procedure shall be pre-approved by DEQ prior to implementation. DEQ understands influent into the lagoon was not known at the time the procedure was developed. However, the testing consultant did not contact DEQ prior to implementing the deviation from the Procedure.

- **Completeness Metric**

  DEQ utilizes the Visual Sample Plan (VSP) software developed by the Pacific Northwest National Laboratory (PNNL) under the auspices of the United States Department of Energy (DOE) to generate so-called discomfort curve using an EPA-approved statistical power curve to incorporate a fixed regulatory limit, a calculated average seepage rate, and the variability around the seepage rate to create a defensible and objective "bright line" number of test days needed for completeness of seepage rate testing.

  Utilizing the data in the Report of a measured seepage rate of 0.133 inch per day with a standard deviation of 0.10743462 inch per day, the VSP indicates 11 samples are required to provide a 95 percent confidence that the seepage rate will not exceed the regulatory limit.

  The Report provides only 5 samples; therefore, the test did not meet this metric.

- **Category Metric**

  The Category Metric cannot be properly evaluated as the error in the influent measurement is identified as 1,000 gallons for each 24-hour period. The Report does not discuss how this error was calculated given the accuracy of the equipment used to measure influent into the lagoon.

- **Consistency Metric**

  As defined in the current DEQ guidance, consistency compares the last calculated seepage to an interval around the average seepage rate of the preceding four calculations. At the discretion of DEQ, more than four seepage rates may be used. The interval is equal to plus-or-minus (+/-) 20 percent of the average value. If the last calculated seepage rate for a time period falls within the +/- 20 percent interval, consistency is considered to be proved.

The seepage test report does not demonstrate that any of the calculated seepage rates fall within (+/-) 20 of the average of the previously measured seepage rates; therefore, the test does not meet the consistency metric.

- **Data Quality Metric**

  The extreme variation in the measured seepage rates over the five periods indicates the lagoon was not stabilized during the test period. The Report indicates the measured seepage rate during the first 24-hour interval was 0.2915 inch per day with a downward trend to a gaining rate of 0.0190 inch per day on the fifth and final day of the test period.

  As discussed in DEQ's August 2016 *Guidance for Evaluating Wastewater Lagoon Seepage Rates*, the data collected before the start of the testing should provide information to determine if the lagoon has stabilized. Test data in the report submittal should include a description of how the lagoon was stabilized before the testing. If a lagoon is not properly stabilized, the seepage rates will be inconsistent and may show a failing or inconclusive test.

  Neither the data submitted, nor the seepage test report demonstrate the lagoon was stabilized prior to recording seepage rates.

If you have any questions or comments, please contact me at (208) 373-0123 or michael.stambulis@deq.idaho.gov.

Regards,

Michael Stambulis

Michael Stambulis, PE
Senior Water Quality Engineer

EDMS 2023AGD8230

EC: Pete Vidmar, PE, HDR/SPF (Pete.Vidmar@hdrinc.com)
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