

**Harbison Walker Phase I Passive Treatment System**  
**SRI O&M TAG Project #75 Request #1**  
**OSM PTS ID: PA-193**

Requesting Organization: Ohiopyle State Park

Requesting Organization Representative: Cliff Denholm of Stream Restoration Incorporated on behalf of Ohiopyle State Park

Dates of work performed: 3/24/2023-5/2/2024

Initial Request

BioMost, Inc. conducted a site inspection in conjunction with Snapshot sampling on 3/24/23 and found the system in need of maintenance, primarily caused by beaver activity and excessive woody growth. On 3/30/2023, Cliff Denholm of Stream Restoration Incorporated (SRI) corresponded with the park manager at Ohiopyle State Park about performing maintenance at the Harbison Walker Phase I treatment system and met with park personnel on 8/9/23 to discuss maintenance needs. Concerns included:

- Beaver activity within and among treatment components causing short circuiting and unintended flow paths
- The JVFP inlet channel was dammed by beavers forcing water towards the shared embankment with the HFLB
- Water within the HFLB was not flowing through limestone; Initial installation of stone was below water elevation due to challenges with sandstone present in the outlet channel.
- Baffle curtains detached or not functional in Settling Pond 1.
- Uprooted trees caused embankment instability in various locations.
- Trees growing along the embankments presented potential future instability challenges.

Work Completed

BioMost personnel mobilized to the site in March 2024 and performed the following maintenance and site characterizations:

- Cleared significant amount of woody vegetation from constructed embankments including mature trees which had caused embankment instability after falling.
- Re-stabilized embankments with tree damage as needed.
- Removed dams appearing to be constructed by beavers from spillways as appropriate.
- Installed “beaver deceivers” within channels to discourage future dam building and maintain design water levels.
- Test pit excavated within VFP; found good permeability still existed within media and stone was clean for a 25 year old system underneath approximately 13” of iron on media surface.
- Remaining VFP material left in place to limit disturbance since the component was still functioning as intended with no evidence of the emergency spillway being used.
- HFLB outlet channel beaver dam cleared and accumulated vegetation and sediment removed; Beaver deceiver retrofitted and installed onto existing HFLB outlet pipe.
- HFLB limestone media washed and consolidated to the center of the pond to raise the stone height and improve contact with water flowing through the stone.
- Vegetation cleared from diversion ditch above system to provide better site access.

### Results

Field water monitoring conducted before and after maintenance is provided in the table below indicating significant improvement to treatment effectiveness following maintenance. Water monitoring conducted during the 2025 Statewide Passive Treatment System demonstrated that the final effluent is still net-alkaline with pH >7 and iron less than 1 mg/l indicating the system is still working well.

### **Field Measurements Before and After Maintenance**

Date	Sample Point	Time	pH	Alkalinity (mg/l)	Flow (GPM)
3/24/23	HFLB Out	1404	3.8	0	~16
3/24/23	VFP Out	1423	5.44	10	24
3/24/23	ALD Out	1449	6.11	154	16
5/2/24	HFLB Out	1326	7.0	77	9
5/2/24	VFP Out	1340	7.0	66	13
5/2/24	ALD Out	13:50	6.0	148	11

**Recommendations & Future Considerations:** On-going water monitoring and site inspections should continue. Refreshing and expanding the anoxic limestone drain for improved alkalinity generation should be considered if monitoring indicates a decrease in treatment. Additional limestone could be added to the HFLB. In addition, newer treatment technologies developed since installation of this system are likely to improve overall water quality.

### Photo Log



**Top Left:** Beaver activity was observed throughout the site causing short circuiting (3/24/23).

**Top Right:** Heavy woody vegetation was also observed and several larger trees had fallen and lifted roots caused low spots in pond embankments (3/24/23).

**Top Right:** Beaver dam installed in SP1 spillway caused water to flow over embankment and into the wetland, short circuiting the VFP, SP2, and the majority of the wetland (3/24/23).





**Top:** Woody vegetation and beaver dam material was removed from throughout system (3/27/24).

**Middle Left:** Beaver dams were removed from between several components (3/22/24).

**Bottom Left:** 4" Valterra VFP drain valve was replaced.

**Right:** VFP was drained and a test pit excavated. Though about one foot of iron precipitate was found on top of the half-foot compost and three-foot limestone layers, VFP permeability was found to be adequate and cleaning was deemed unwarranted (3/29/24).





**Top:** HFLB limestone was washed and the outlet pipe reset and extended (4/10/24).  
**Bottom:** SP1 (top left) and VFP (top right) cleared of woody vegetation and beaver dams. The upslope diversion ditch (foreground) was cleared of vegetation and cleaned as needed (4/11/24).