Stream Biological Conditions EA Report

Project Name	H-600 Pipeline Spread C	**AFE**	124300131	**Spread**	H-600 Pipeline Spread C
Contractor	Precision			**Report #**	281
Environmental Auditor	Jeffrey Arbogast			**Date/Time**	10/9/2023 8:37 AM

Stream ID	S-H105	**Crossing Start Date**	10/9/2023	**Crossing Completion Date**	10/13/2023
Milepost	93.22	**Pre-Con Assessment Date**	9/11/2023	**Post-Con Assessment Date**	10/13/2023
Station	4922+19	**Bankfull Width (ft.)**	3.4	**Riffle:Pool Complexes Present?**	No
State	WV	**Stream Classification**	Perennial		
County	Webster	**303(d) Impairment Listing**	No		

	Resource Post-Crossing Conditions	
1	Were all applicable resource specific crossing conditions satisfied?	See Below
	Time of Year Restrictions (TOYR)? Yes Mussel Relocation? N/A	
2	This question is not applicable in WV.	
3	Which crossing methods were utilized during the stream crossing? (If so select one or more) Dam & Pump Flume X Cofferdam Conventional Bore Horizontal Directional Drill (HDD) Bore	
4	Was the top 1-foot (12-inches) of streambed substrate segregated and stockpiled separate from trench spoils?	Yes
5	Was excess material not needed for backfill removed and disposed of in an upland area?	N/A
6	Was the top 12-inches of backfill made with clean native stream substrate?	Yes
7	Was the pre-construction survey data utilized during restoration in attempt to re-establish pre-construction contours?	Yes
8	Were any field modifications to the stream implemented by project or regulatory personnel to address potential drainage or bank restoration limitations?	No
9	Were impervious trench breakers/plugs properly installed within 25-feet of top-of-bank to prevent subsurface erosion to or from the resource area?	See Below
10	Was permanent seed and stabilization material (straw or matting) applied to riparian areas and stream banks prior to re-establishing flow to the impact area of the channel?	Yes
11	Was the time of disturbance minimized by conducting resource work continuously to completion?	Yes
12	Have civil surveys been scheduled to verify as-built conditions meet pre-construction conditions in accordance with the project Mitigation Framework and federal/state permit requirements?	Yes
13	Are bareroot saplings required and/or scheduled to be planted for the dormant season (10/1 - 4/30)?	N/A
14	Did any unauthorized discharges to unpermitted resources occur during the crossing? If so, explain the corrective actions implemented in the Comments section and include additional photos.	No

	Biological Conditions	**Pre-Con**	**Post-Con**
15	**Predominant Substrate Type (select one):** Bedrock, Boulder (>10"), Cobble (2-10"), Gravel (0.1-2"), Sand (<0.1"), Mud/Silt/Clay	Mud/Silt/Clay	Mud/Silt/Clay
16	**Channel Conditions:Rating:** 1-Optimal (80-100% stable banks), 2-Sub-optimal (60-80% stable banks), 3-Marginal (40-60% stable banks), 4-Poor (20-40% stable banks), 5-Severe (0-20% stable banks, highly eroded or unvegetated banks	1	2
17	**Riparian Buffer Zone within ROW and ≤50 ft. from Stream Top-of-Bank: Rating:** 1-Optimal (60-100% heavy vegetative cover), 2-Sub-optimal (30-60% mixed vegetated coverage), 3-Marginal (<30% vegetative coverage), 4-Poor (Mowed/maintained area or farmland, impervious area, sparsely vegetated coverage, etc.)	1	4

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	Biological Conditions Continued	Pre-Con	Post-Con
18	**Instream Habitat Conditions:** Examples: Varied substrate sizes, varied combination of water velocities & depths, presence of woody/leafy debris, stable substrate with low amount of mobile particles, low embeddedness, shade protection, undercut banks, root mats, Varied combination of water velocities, submerged aquatic vegetation Rating: 1-Optimal (Habitat conditions present in >50% of resource), 2-Suboptimal (Habitat conditions in 30-50% of resource), 3-Marginal (Habitat conditions in 10-30% of resource), 4-Poor (Habitat conditions in 0-10% of resource)	1	2
19	**Channel Alterations:** Examples: Straightened channel, non-MVP stream crossings, non-native riprap/rock along banks, concrete/gabions/concrete block, manmade embankments, constrictions w/in channel, livestock or agricultural impacts Rating: 1-Negligible (unaltered/natural stream), 2-Minor (20-40% of resource disrupted by channel alterations), 3-Moderate (40-80% of resource disrupted), 4-Severe (>80% of resource disrupted)	1	2

Additional Notes

Stream S-H105 headwaters start at the location of the crossing, and at the time of construction, no flow was in the feature. A dam and flume pipe was installed and used as needed throughout the crossing to carry any flow that occurred.

Expanded notes for question 1: Stream S-H105 has a time of year restriction (TOYR) prohibiting construction between Sept. 15th and March 31st. A waiver has been obtained from the appropriate agencies to allow construction within this window.

Expanded notes for question 9: The stream S-H105 crossing is completely within the boundary of wetland W-H66, therefore the trench breakers must be built on the wetland boundary and not within the normal placement guidelines. The bentonite trench breaker placements are as follows; 35 feet from top of bank on the going away side (GAS). On the coming in side (CIS), it is scheduled to be built at 154 feet from the top of the bank when the wetland crossing is completed.

Condition on question 17 was given a post-construction rating of 4, due to the lack of vegetation in the disturbed permitted impact area following completion of the crossing and restoration efforts. Stream S-H105 buffers are within wetland W-H66 PFO and fall under wetland reclamation standards. The topsoil has been properly stabilized and the disturbed area has been seeded with the appropriate permanent seed mix in accordance with Appendix B: Restoration Work Plan of the Mountain Valley Pipeline Comprehensive Stream and Wetland Monitoring, Restoration and Mitigation Framework.

10/09/2023: The topsoil from the stream 10’ buffer and the top 12” of streambed substrate were placed in separate super sacks and stockpiled in an upland area. The blasting crew drilled, set charges, and shot the ditch line through the stream before excavation of the ditch could start. The native subsoil from the trench was segregated during excavation and will be used to backfill the stream (Ref. Appendix B: Restoration Work Plan-MVP Section 3.4).

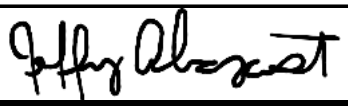
10/10/2023: Ditch excavations continued on the GAS of W-H66 through to the CIS of S-H105 until enough footage was made to lower in pipe. Once the pipe was welded, x-rayed, and coated, it was prepped for backfilling.

10/11/2023: The remaining ditch line was excavated from just inside of the CIS of W-H66 to the CIS of S-H105 and a section of pipe was lowered in. This section of pipe was welded; x-rayed, and coated while the GAS of W-H66 ditch line was being backfilled up to the GAS of S-H105.

10/12/2023: The backfilling of stream S-H105 was completed with clean native subsoil. The CIS 10-foot buffer topsoil and the top 12" of stream substrate were replaced to pre-construction elevations and contour, which were confirmed via survey data and pre-construction photos. Temporary erosion and sediment controls were added for the night.

10/13/2023: After finishing the GAS buffer, silt fence was installed and the approved permanent seed mix was applied. The 50' buffer on the GAS was restored, although the CIS will not be completed until the final tie in is made in W-H66 and the trench is backfilled. The dam and flume were removed to complete the crossing.

In accordance with the Mountain Valley Pipeline Comprehensive Stream and Wetland Monitoring, Restoration and Mitigation Framework, this independent report was completed to document the on-site monitoring of instream invertebrate and fisheries resources during all construction activity related to waterbody and wetland crossings, and document instream conditions and any impacts to the resources.

Name	Signature	Company	Date
Jeffrey Arbogast		SWCA	10/13/2023

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Required Photos

GPS Location	See Caption in Photo
Description	Downstream view of permitted impact area during pre-construction assessment.

GPS Location	See Caption in Photo
Description	Downstream view of unimpacted area during pre-construction assessment.

GPS Location	See Caption in Photo
Description	Downstream view of permitted impact area during post-construction assessment.

GPS Location	See Caption in Photo
Description	Downstream view of unimpacted area during post-construction assessment.

GPS Location	See Caption in Photo
Description	View from CIS standing on the center line pre-construction.

GPS Location	See Caption in Photo
Description	View from GAS standing on the centerline - pre-construction.

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Optional Photos

GPS Location	See Caption in Photo
Description	View from CIS standing on the centerline - post-construction.

GPS Location	See Caption in Photo
Description	View from GAS standing on the centerline - post-construction.

GPS Location	See Caption in Photo
Description	Stream substrate was removed with a mini excavator and placed in super sacks.

GPS Location	See Caption in Photo
Description	Lowering in the stream section of pipe.

GPS Location	See Caption in Photo
Description	Stream substrate being returned. A multitude of equipment and techniques were used to painstakingly reconstruct the stream.

GPS Location	See Caption in Photo
Description	Survey checking contour and elevation against pre-construction data.