



## **Post- Impact Assessment of the Biological Community after the April 27, 2021 Tanker Rollover on Highway 36, Lyons, Colorado**

### **Introduction**

This memo summarizes events and data related to the April 27, 2021 tanker rollover on Highway 36. The tanker truck gasoline spill resulted in impacts to the fish and benthic macroinvertebrate (BMI) community. BMI are the bugs that live in the creek, are a food source for fish, and are indicators of water quality. BMI water quality impact scores highlighted a 46% loss of sensitive species (intolerant to pollution) and a 22-point reduction in the Multi Metric Index (MMI). The following sections discuss background information, post-impact findings from the Left Hand Watershed Center's (the Watershed Center) BMI assessment, and next steps related to the tanker rollover impacts.

### **Background**

On April 27, 2021, a tanker truck carrying 8,500 gallons of gasoline rolled over on Highway 36 near mile marker 18, just north of the Apple Valley neighborhood and adjacent to the North St. Vrain Creek in Lyons, Colorado. The Environmental Protection Agency (EPA) led the investigation and reported up to 1,600 gallons of spilled gasoline.

The impacts to the creek were reported by local residents and monitored by the EPA and local partners, including the Left Hand Watershed Center (the Watershed Center). On April 27, residents reported fishkill for up to four miles downstream of the spill location (see the extent in the [EPA's Story Map](#)). On April 27 and 28, EPA measured water quality impacts of toxic organic components of gasoline: Benzene, Toluene, Ethylbenzene, and Xylene (BTEX) and Gasoline Range Organics (GRO). BTEX measurements were all below drinking water quality standards and GRO was slightly above the standard limit immediately downstream of the rollover, and was not detected further downstream. Sample results can be found [here](#). The EPA concluded that there were no long lasting impacts to water quality, and that any negative impacts were in the immediate pulse of gasoline after the rollover.

On April 30, the Left Hand Watershed Center collected benthic macroinvertebrate (BMI) samples throughout the impacted area to further assess the magnitude and spatial extent of impacts to the biological community. Samples were collected at four sites, three of which were established Watershed Center BMI monitoring locations. Monitoring locations are described in Table 1 and shown in Figure 1 below.

Table 1. Associated Creek, Monitoring Years, and Descriptions of monitoring locations on the North St. Vrain and St. Vrain Creeks after the tanker rollover in April 2021.

Site Name	Creek	Previous Years Monitored	Description
Button Rock	North St. Vrain	2019, 2020	Upstream of spill, reference location
Apple Valley North	North St. Vrain	2019, 2020	0.7 miles downstream of rollover
Apple Valley South	North St. Vrain	None	1.5 miles downstream of rollover, new monitoring site for spatial assessment comparison
Bohn Park	St. Vrain	2020	3.8 miles downstream of rollover and the confluence of the North and South St. Vrain Creeks

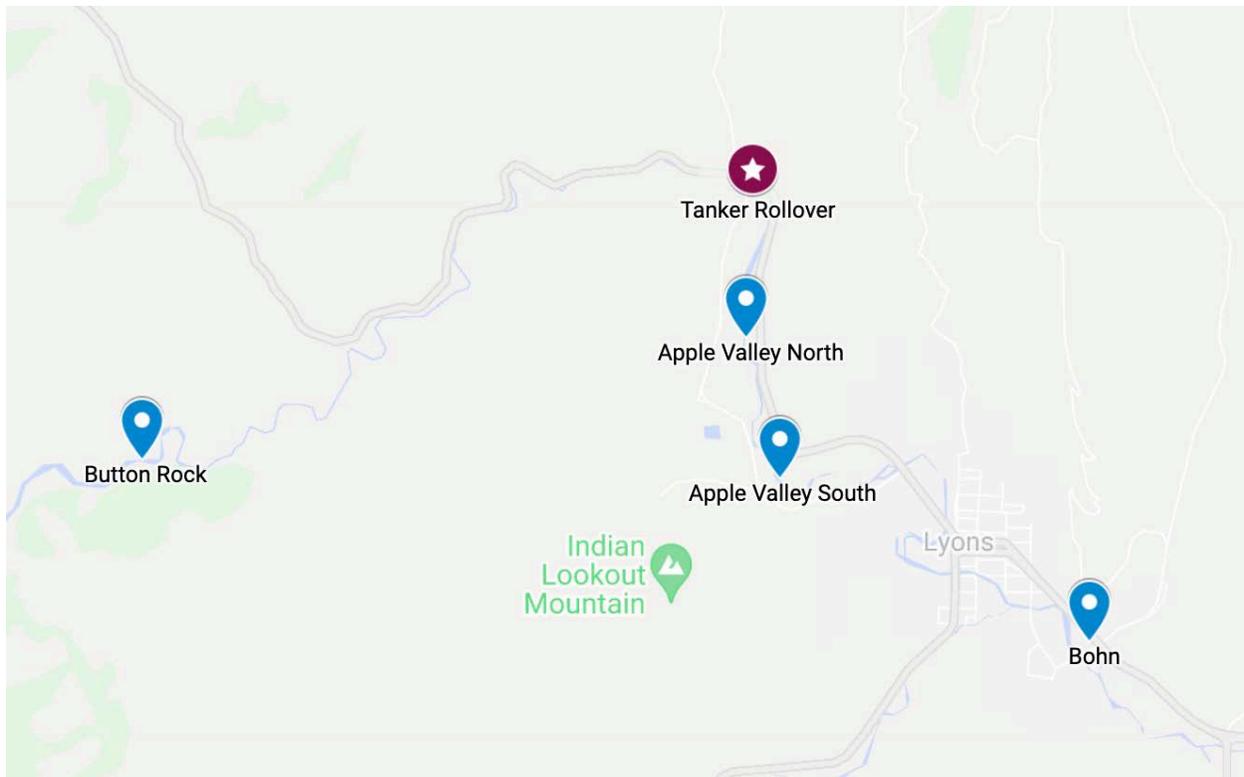


Figure 1. Locations of each monitoring location on the North St. Vrain and St. Vrain Creeks after the tanker rollover in April 2021.



## Findings

The most relevant metrics we assessed in our BMI sampling effort were the Multi-Metric Score (MMI) and percent intolerant taxa. The MMI score is commonly used across the State of Colorado as an indicator of water quality impacts to the BMI community. The percent intolerant taxa is another indicator used to directly assess pollution impacts; it is the proportion of your sample made up of intolerant or sensitive BMI species. The lower the MMI and percent intolerant taxa scores, the worse the water quality impacts.

We found that the upstream Button Rock site showed no impairments, as expected. Downstream of the rollover, we found that communities were most impaired (compared to past years) immediately downstream at Apple Valley North site, and impairments were evident at Bohn Park (Tables 2 and 3). At Apple Valley North, MMI and percent intolerant taxa scores after the post-rollover gasoline spill decreased nearly 22 points and 46%, respectively. This is a clear indication of impairment. These effects were also evident as far downstream as Bohn Park, with an on-site decrease in nearly 12 points for MMI and 29% for percent intolerant taxa. Spatially, there were slight improvements the farther downstream the site (Tables 2 and 3).

Table 2. MMI scores at the four monitoring locations for past monitoring years and after the tanker rollover.

Site	2019 MMI	2020 MMI	Post Rollover MMI	Change 2020 vs. Post Rollover
Button Rock	66.3	71.5	69.1	-2.4
Apple Valley North	71.5	68.9	47.0	-21.9
Apple Valley South	-	-	56.5	-
Bohn	-	72.9	61.1	-11.8

Table 3. Percent Intolerant Taxa (proportion of intolerant or sensitive species in a sample) scores at the four monitoring locations for past monitoring years and after the tanker rollover.

Site	2019 % Intolerant Taxa	2020 % Intolerant Taxa	Post Rollover % Intolerant Taxa	Change 2020 vs. Post Rollover
Button Rock	75%	88%	83%	-5%
Apple Valley North	82%	89%	43%	-46%
Apple Valley South	-	-	47%	-
Bohn	-	79%	50%	-29%

## What's Next?

The Watershed Center's assessment indicates post-rollover impacts to the BMI community. Our priorities are to coordinate with local agencies and experts on our findings and continue monitoring these locations into the future. We plan to use these data to assess the long-term impacts and develop recommendations for follow up management and restoration actions.