Petrohawk has converted 100% of frac services provided by Schlumberger in the Eagle Ford to the HiWAY technique.

Dick Stoneburner, COO and President, Petrohawk

10,000 + stages 80 + customers 15 countries

HiWAY

Since 2010, the HiWAY* flow-channel hydraulic fracturing service has helped operators increase production while using less water and proppant. The first technique of its kind, the HiWAY fracturing service creates stable channels within the fractures—decoupling fracture conductivity from the proppant pack. This results in infinite fracture conductivity.

**Flow-Channel Hydraulic Fracturing Service**

**Conventional hydraulic fracturing**

Conventional hydraulic fracturing methods rely on larger proppant sizes and resin coating to improve conductivity.

**HiWAY flow-channel fracturing**

The HiWAY service uses specialized blending equipment and control systems to pump proppant in pulses—creating stable, infinite-conductivity flow channels within the fractures.

Since its inception, HiWAY fracturing has conserved:

- 350,000,000 gallons of water
- 8,300,000 barrels

≥ 2,400+ households'† annual water usage

Since 2010, HiWAY fracturing has saved:

- 1.2 billion pounds of proppant
- 10,206,386 ft³

Enough to fill any of the following:

- 6,000 railroad cars
- 320 Boeing 747 interiors‡
- 60 Big Bens (Clock Tower)
- 9 Washington Monuments
- 2 RMS Titanics

The implementation of the HiWAY service has prevented:

To date, the HiWAY service has prevented over 400 screenouts.

HiWAY Fracturing Conventional Fracturing

- 99.95% proppant placement rate
  - Unprecedented in the industry
- 95–97% proppant placement rate
  - Industrywide average

**HiWAY Stages by State**

In a recent Eagle Ford case study...

<table>
<thead>
<tr>
<th>Stage Type</th>
<th>Conv.</th>
<th>HiWAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil</td>
<td>18,555 bbl</td>
<td>26,535 bbl</td>
</tr>
<tr>
<td>Gas</td>
<td>207,103 bbl</td>
<td>87,500 bbl</td>
</tr>
<tr>
<td>Proppant</td>
<td>3,709,000 lbm</td>
<td>2,395,000 lbm</td>
</tr>
</tbody>
</table>

On average, the HiWAY service helps operators use 40% less proppant per job. Compared to slickwater treatments, the HiWAY service uses up to 60% less water.

The average HiWAY channel fracturing job increases production by more than 20%.