How We Reduced Permanent Impacts to Waters of the United States by over 78%
Case Study on the I-15 La Mesa/Nisqualli Interchange Project, Victorville, California

Background
- The 8-mile freeway interchange of La Mesa and Nisqualli roads and interchange 13 to 11 is the future component of I-15.
- A new roadway connecting structure.
- Additional development of the proposed freeway.
- Project implementation would result in impacts to Oro Grande Wash.
- United States Army Corps of Engineers Institutional Permit required as prerequisite to designing this interchange.
- The Lahontan Regional Water Quality Control Board expressed concerns about impacts to water quality and hydrology, including channelization and habitat restoration.

Approach
- Parsons Brinckerhoff worked with the City and agencies to address and alleviate regulatory agency concerns.
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- Region's Superior project engineer and regional managers worked with the City and agencies to address and alleviate regulatory agency concerns.

Parsons Brinckerhoff provided regulatory services and addressed regulatory concerns.

Project implementation would result in impacts to Oro Grande Wash, a tributary to the Mojave River and Black Rock Desert. Parsons Brinckerhoff navigated the regulatory process:
- The Lahontan Regional Water Quality Control Board expressed concerns about impacts to water quality and hydrology, including channelization and habitat restoration.
- Parsons Brinckerhoff worked with the City and agencies to address and alleviate regulatory agency concerns.

Traditional transportation infrastructure engineering design:
- Parsons on the site and materials needed to ensure the design met the environmental requirements.
- A typical engineering solution would convey water from a point A to point B along a linear path.
- Parsons Brinckerhoff worked with the City and agencies to address and alleviate regulatory agency concerns.

Regional Water Quality Control Board, the design team resulted in mitigation requirement conflicts.

Implications
- Parsons Brinckerhoff worked with the City and agencies to address and alleviate regulatory agency concerns.
- The authors would like to thank the following individuals from federal and state regulatory agencies whose involvement helped to create a better project:
  - United States Army Corps of Engineers (Randy Cohen, Stephanie Hall, and Veronica Ochoa), Lahontan Regional Water Quality Control Board (Monica Williams, Eric Gurnell, Marilyn Hahne, and Anna Burton), California Department of Fish and Game (Tonya Moore and Eric Weiss), and local communities (Sean McGlade, Chris Turnage, Gary Wintergerst, Tim Byrne, Vikrant Miller, Anthony Ng, and Bob Pavlik) for their support and guidance on this important transportation project. Thank you to the following individuals from the City of Victorville (Sean McGlade), Stephanie Hall, Kathryn Deering, and Parsons Brinckerhoff (Doug Beyer, Peter Masson, Jarrod Gagnon, Eric Gurnell, and Eric Weiss).

Results/Outcomes
- The permanent impacts to non-federal Waters of the United States decreased from 3.85 acres to 0.84 acres, over 78%.
- We streamlined the right-of-way (ROW) process to ensure speed to the project.
- We incorporated a stilling basin equipped with baffled piers to reduce the footprint that was prepared in the original design.
- We incorporated a splash wall to spill flow into separate flow ways, further reducing flow velocities and increasing infiltration.

Acknowledgements
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