PROPOSAL
Professional Services for Engineering, Environmental, Permitting, Right-of-Way Planning, and Related Services

Seven County Infrastructure Coalition
Uinta Basin Railway Project

November 1, 2018
November 1, 2018

ATTN: Mike McKee, Executive Director
Seven County Infrastructure Coalition
via secure link upload

RE: Uinta Basin Railway Project

Dear Mike McKee and Selection Committee Members:

HDR is eager to help the Seven County Infrastructure Coalition deliver railroad service to the Uinta Basin by December 1, 2023. We know you need to complete your railroad with the least engineering, permitting, and construction cost, and the fastest possible environmental clearance. HDR has the vision and the proven methods to deliver your desired results.

We understand the strategic value of speed to market. Our team has the experience and drive to accomplish this. From the 1,500-mile Alberta to Alaska Railway to the 150-mile CN-EJ&E merger to the 30-mile New Orleans & Gulf Coast, we have successfully delivered Surface Transportation Board (STB) and Federal Railroad Administration (FRA) environmental approvals, grants, loans and engineering for the largest freight railway projects across North America.

Our team has been assembled for its experience, commitment, and performance. We possess the right blend of local knowledge and national expertise. We have partnered with Johansen & Tuttle Engineering, Juliano Consulting, Sunrise Engineering and other specialty consultants who also have deep Uinta Basin project experience and stakeholder understanding.

Our outstanding Project Manager, Mark Hemphill, is a client-oriented professional with a proven track record in all of the skills needed to plan, engineer, permit, and construct a large greenfield railway. He is known in the railroad industry for his ability to navigate the federal permitting process to deliver commercially successful railway projects for private and public clients ranging from the State of Iowa to BNSF Railway. He will leverage his STB relationships and will have laser-like focus on schedule, budget, and your goal.

You asked for an innovative approach to meet your schedule and keep costs low:

• We’ve located an all-Utah route competitive in capital cost and mileage to your Rifle and Mack routes, avoiding potential political problems with Colorado and funding constraints from the Community Impact Board (CIB). This will provide equal access to BNSF Railway and Union Pacific (UP) near Westwater, and the opportunity for future railroad line expansion into San Juan County and southward.
• We believe a Design-Build or Construction Manager/General Contractor (CM/GC) approach will deliver your railroad the fastest, and also substantially reduce your up-front costs.
• We’ve included in the first 60 days of the project a Route and Alternatives Selection step, leading to an early meeting and consensus with the STB and your third-party contractor, to reduce cost and time for survey, engineering and baseline environmental studies. This will also minimize opportunities for environmental opposition.
• We’ve priced our proposal to preserve your consultant budget, and we have included an option for Design-Bid-Build if that later becomes your preferred delivery option.

We stand committed to deliver our respective firms’ resources as well as our personal best to deliver the Uinta Basin Railway on time, and within budget. We are truly excited by the opportunity this project represents. Our dedication and focus on a successful outcome will be unwavering.

Sincerely,

Mark Hemphill
Project Manager

Bill Hjelholt
National Freight Rail Director

Dave Nazare, PE
Principal-in-Charge
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Project Team
Section 1 Project Team

Why the Coalition should Select HDR

Years of experience, cultivated relationships, technical, permitting and financing expertise, and unique vision and approach — all with a laser-like focus on results...these are the traits the HDR team brings to the Coalition. We have partnered with Johansen & Tuttle Engineering (J&T), Juliano Consulting, Sunrise Engineering, and other specialty subconsultants to not only meet, but exceed, all requirements set forth in the scope of work in the Request for Proposal. Our strengths, highlighted below, will help the Coalition obtain the required federal regulatory approvals by December 1, 2020 and meet their December 1, 2023 operational target date.

A Veteran Leadership Team

Our leadership team — including Mark Hemphill, Don McCammon, and Kevin Keller — have led HDR’s largest greenfield rail projects for over 12 years. Most recently, they worked together on the Newfield Uinta Basin Rail Feasibility Study, the 1,500-mile-long Alberta to Alaska Railway to haul Canadian oil to tidewater, the 500-mile Canadian Pacific Railway Powder River Basin Extension, and a 2,000-mile-long project to create a 12-train-per-day crude oil corridor from secondary main lines and branch lines to a western Class I railroad. Mark, Don, and Kevin will be dedicated full time to the Coalition’s project, working in HDR’s Salt Lake City office to keep the project on schedule.

Relationships with BNSF and Union Pacific

HDR is the preferred and largest provider of planning, engineering, environmental analysis and permitting, and real estate services for both BNSF and UP. We have more than 100 projects ongoing with these railroads including 20 which are major capacity or greenfield projects. We are currently leading the engineering, permitting, real estate acquisition, bid and procurement package development, and construction management of UP’s new $550 million Brazos Rail Yard in Hearne, Texas — the largest capital investment on a single project in UP’s 155-year history.

“HDR has consistently delivered on a myriad of project deliverables within a very challenging and dynamic project environment. This level of performance has been instrumental for on-time project delivery, high customer satisfaction, and more accurate financial forecasting. I would recommend the HDR team to anyone looking for truly professional design and project management services.”

~ Nicholas Konen, Manager of Engineering, BNSF Railway

Federal, State, and Local Stakeholder Relationships

HDR is well-known to FRA through several large projects including four intercity passenger rail projects and two major rail relocation projects. We have cultivated relationships with county governments, the local USDA and NRCS offices, state SHPOs and other Section 106 consulting parties, and local midstream and oil production companies located in the Basin. HDR is also respected by UDOT and CDOT. We’ve also consulted with over 200 federally-recognized tribal entities over the past 4 years as BNSF’s program manager for the PTC Tower Permitting project. Pamela Juliano brings excellent Navajo and Ute Tribal Business Council relations on land and water, emergency resource, and transportation issues.

HDR is one of only three firms that STB relies on to successfully deliver NEPA documents for major rail actions in the past 5 years. Our recent applicant project experience includes BNSF’s build-in at Bayport, Texas, and the Alaska Railroad’s Port MacKenzie Extension project where we completed baseline, engineering, and operational studies.

Local Depth and Capacity of Staff Expertise

HDR has a large office in Salt Lake City with 80 technical professionals supporting projects from planning through construction. We offer a full-service suite of real estate and utility relocation services with extensive railroad and oil and gas experience. We also have complementary offices in Colorado with access to more than 200 technical professionals. In addition, with their extensive eastern Utah experience, Sunrise Engineering and J&T will complement HDR’s design team from investigation through design.

Financing Expertise

HDR has secured nearly $1.5 billion in federal funds for 60 projects for our clients, accounting for 19% of the total construction funds awarded to date through USDOT grant proposals. This includes our recent support of UDOT to win a TIGER grant for the Dog Canyon Climbing Lanes and INFRA Large Project funding for the Northwest Quadrant Freight Mobility Project.

Recent HDR Railroad Projects in UT, CO & WY:

- Newfield Uinta Basin Feasibility Study (UT)
- Central Utah Rail Third-Party EIS & Preliminary Engineering (UT)
- BNSF Hudson Crude Oil & Frac Sand Transload Center (CO)
- Over 50 various BNSF mainline capacity projects (WY and CO)
- BNSF PTC Tower Permitting (WY & CO)
- USACE/Hill AFB UTTR Rail Spur & Missile Storage Facility (UT)
- UP Great Salt Lake Causeway Bridge and Culvert Crossing (UT)
- DM&E/CP Powder River Basin Coal Line Expansion (CO & WY)
Unique Vision and Approach
New rail lines can be over-engineered for the freight volumes and operational speeds needed, because most teams don’t have HDR’s real-world experience with greenfield railroad lines. Our designers envision that the use of the correct Class I railroad standards and materials will save the Coalition 20% or more in capital cost over typical engineering approaches, with similar safety and reliability.

HDR recently achieved a US patent for its “Infinity Loop” design for terminals/transloads for crude oil and other bulk products. We are currently designing Infinity Loops for projects in British Columbia, Alberta, Washington, Texas, and Louisiana. These infinity loops offer real estate cost savings and flexibility unprecedented in railroad terminal design, and will reduce the Coalition’s land purchase costs and potential impacts on agricultural land.

HDR is also an expert in alternative delivery methods including Design-Build and CM/GC that will an advantage in meeting the Coalition’s need for rapid speed to market.

Our Teaming Partners

Juliano Consulting
Pamela Juliano has nearly two decades of experience in government and public relations. After serving for nearly a decade as a Congressional advisor, she launched Juliano Consulting, which specializes in positioning key governmental and community relations for benefit of project development and funding procurement support. She has also developed key federal, community, tribal and state government relationships for the benefit of project development and funding procurement support.

Johansen & Tuttle Engineering, Inc.
J&T has provided full-service civil engineering services in rural Utah, particularly in the Uinta Basin, for over 45 years. They’ve worked for many of the municipalities in the seven counties and competed projects in the Uinta Basin for several federal agencies. Areas of expertise include land surveying, right-of-way acquisition, roadway design, site design, erosion control design, water modeling, hydrological analysis, and utility design including sewer, water, drainage, and dry utilities.

Sunrise Engineering
Sunrise Engineering has been providing civil/municipal and site development services for 40 years. They are an active member of the Vernal Area Chamber of Commerce, presenting our team with many opportunities for coordination with local stakeholders. They currently have 330 staff, 47 of which are licensed engineers; they are licensed to practice in 17 states including Utah, Wyoming, and Colorado.

SWCA Environmental Consultants
SWCA has been a full-service provider of cultural resources consulting services to clients in northeastern Utah and northwestern Colorado for over 25 years. Their Vernal, Salt Lake City and Denver offices employ more than 40 archaeologists, anthropologists, architectural historians, historians, and paleontologists who are supported by a large pool of qualified and capable seasonal field personnel, allowing them to execute quickly and efficiently on projects of all sizes.

Montgomery Archaeological Consultants, Inc.
MOAC has successfully completed more than 3,000 cultural resource investigations on state, federal, and private lands. These projects range from Class I literature reviews to large block inventories, excavations, ethnographic overviews, predictive models, and independent, problem-oriented research. The majority of MOAC’s work over the last two decades has occurred in the Uinta Basin, where they have successfully completed nearly 2,000 cultural resource survey, monitoring, and data recovery projects.

Gerhart Cole
GC provides geotechnical and geologic engineering services and has practical experience with geotechnical/geologic data collection and assessments of rail lines, utility corridors, roadways, and highway widening projects. GC also brings hands-on experience with utility corridors, highways, canals, and pipelines through similar terrain expected for the Uinta Basin Railway project. They’ve provided geotechnical data collection and analysis for several oil shale facilities and feasibility studies throughout the Uinta Basin for such clients as Union 76, Chevron, Shell, and Mobil.

Parametrix
Parametrix’s Salt Lake City office has been performing rail and freight planning in Utah for the last decade. Vern Kessler provided capacity analysis on HDR’s team for the Uinta Basin Transportation Study. He’s performed freight planning projects for UDOT including the Utah Freight Plan (compliant with FAST Act requirements for road, rail, intermodal, pipeline, aviation, warehousing and distribution), Utah State Rail Plan, and Utah Railroad Crossing Inventory and Inspection.

McMillen Jacobs Associates
McMillen Jacobs has been providing geotechnical, structural, blasting quality assurance, and construction monitoring services to Class I and II railroads, state DOTs, local municipalities, and regional short line carriers for over 30 years. They are experts in design and construction of tunnel and portal rehabilitation, rock slope and soil embankment stability, and deep foundation systems. They’ve been serving BNSF and UP through master services agreements for over 20 years, and have a comprehensive understanding of geologic and conditions throughout the West.

We have constructed a team that balances the need for specialized expertise and capacity with the desire to involve firms that are local to the Seven Counties. The local firms bring valuable connections and understanding of the local environment to our team, and after all, this project is about supporting the local economy.
Uinta Rail Railway Team Organization

Our team is:
- Mostly located in Utah
- Compact, with individuals filling multiple roles
- Complete, able to provide the project from beginning to end

## Highlights

**Location:**
- Mostly located in Utah
- Compact, with individuals filling multiple roles
- Complete, able to provide the project from beginning to end

**Subconsultants Key:**
- Johansen & Tuttle = J
- Sunrise = SR
- SWCA = S
- Montgomery Archaeological = M
- Juliano Consulting = JL
- Parametrix = P
- Ron Clegg = RC

*Committed to relocating to Utah for the duration of the project*
Mark Hemphill | Project Manager

Mark is personally committed to Uinta Basin Railway achieving commercially successful operation. His 38-year railroad career has provided him with broad experience and detailed knowledge of every aspect of railroads: engineering; environmental permitting; operations and maintenance, locomotive and rolling stock acquisition and maintenance; STB economic and environmental regulation; FRA grants, loans, and regulation; public and strategic communications; finance and economics; and labor policy and legal compliance. As a Westerner raised in rural Colorado, and an officer at western railroads, Mark knows the special value of railroads to western mineral extraction and agricultural development and jobs. He applies his broad expertise to provide a complete development process from initial concept through detailed design and permitting to commercial strategy and agreements with railroads, shippers, and government funding agencies. Mark will tell you the truth at every step and be an uncompromising advocate for your railroad because he believes in it.

RELEVANT PROJECT EXPERIENCE

• Newfield Exploration, Uinta Basin Railway Feasibility Study | Project Manager
• Six County Infrastructure Coalition, Railway Reassessment | Study Lead
• UDOT, Uinta Basin Railway Feasibility Study | Planning Lead
• Confidential Western Class I Railroad, Crude-By-Rail Corridor Development | Project Manager
• Alberta to Alaska (A2A) Railway | Operations Lead
• New Orleans Gulf Coast Railroad and Port Plaquemines, Coal and Container Port and Railway Development | Planning Lead

Don McCammon, PE, ENV SP | Deputy Project Manager / Engineering Lead

Don’s 43 years in railroad engineering provides his clients with unparalleled experience and value. His railroad experience includes serving as lead engineer on new-build railroads throughout North and South America, Africa, and the Middle East. His expertise includes tunnels, major bridges, and locomotive repair shops, and he has extensive experience in construction of all railroad features including the need for maintenance and upkeep in the designs. Don applies his construction background from Burlington Northern into his planning and design projects, and utilizes a Value Engineering approach to provide best-value solutions to clients. Don has utilized all types of alternative delivery method, including Design-Build and CM/GC, to help his clients achieve their value, cost, and schedule goals.

LICENSES/CERTIFICATIONS

Professional Engineer: UT 9201939-2202, CO 26464, WY 9889, MO EN-26702, SD 5295, ND PE-9786, KS 10548, MN 46466, NM 11249, MT 7479, NY 098265, OR 78236PE, NE 9943, WA 30049, TX 112542
International Registered Professional Engineer
NCEES Certified
Envision Sustainability Professional

RELEVANT PROJECT EXPERIENCE

• Newfield Exploration, Uinta Basin Railway Feasibility Study | Engineering Lead
• Six County Infrastructure Coalition, Railway Reassessment | Engineering Lead
• UDOT, Uinta Basin Railway Feasibility Study | Engineering Lead
• Alberta to Alaska (A2A) Railway | Engineering Lead
• DM&E/CP Railway Powder River Basin Project | Engineering Lead
Kevin Keller, PG | Environmental Lead / Federal Grants & RRIF Loan

Kevin has 32 years of management, planning, environmental and engineering experience in the freight rail sector, including 11 years with HDR. He has managed the planning, permitting, engineering design, and evaluations of new rail alignments, transportation corridors, new maintenance facilities, new structures, logistics planning, and fleet management. He has also managed public benefits analyses, economic development studies, industrial development studies, feasibility studies, and environmental assessments for numerous federal, state, and private transportation clients, including development and preparation of numerous State Rail and Freight Plans and successful federal grant applications. As a result of his knowledge and expertise, Kevin is recognized by USDOT, FRA, and STB as an expert in the area of freight rail planning and development, and has been invited to assist these federal agencies with the development of the National Rail Plan.

LICENSES/CERTIFICATIONS
Professional Geologist: WY PG-2222, IN 1030, KS 471, KY 1590, TN TN1334
Certified Groundwater Professional: IA 1009

RELEVANT PROJECT EXPERIENCE
- Newfield Exploration, Uinta Basin Railway Feasibility Study | Environmental Lead
- UDOT, Uinta Basin Railway Feasibility Study | STB Relations
- Mississippi DOT, Port Bienville Rail Feasibility Study (FRA) | Project Manager
- New Orleans Regional Planning Commission, New Orleans & Gulf Coast Railroad/LA23 Relocation (FRA) | Project Manager

Jonathan W. Johansen, PE | Roadway Engineer

Jonathan has 15 years of experience managing projects in both the private and public sectors. These projects include right-of-way acquisition, road design, residential, commercial and industrial site development, state park improvements, wastewater collections systems, potable water systems, irrigation systems, and drainage systems. Jonathan has provided design services for water and wastewater projects ranging from subdivision distribution and collection systems to culinary water systems for the State Parks. His involvement has included coordination and design of the relocation of irrigation lines, culinary lines, and sewer collection lines. He has provided design services for drainage projects that included large and small collection systems. His involvement has included drainage modeling and design, contract document preparation, and permitting.

LICENSES/CERTIFICATIONS
Professional Engineer: UT 5148749-2202

RELEVANT PROJECT EXPERIENCE
- Green River City West Industrial Park Master Plan | Project Manager
- Cottonwood Creek Consolidated Irrigation Company Irrigation Water Master Plan, Design, and Construction | Project Manager
- Moore Cutoff Road Improvement | Design Engineer

Pamela Juliano | Tribal Coordination

Pamela has nearly two decades of experience in government and public relations. She specializes in positioning key governmental and community relations for benefit of project development and funding procurement support.

RELEVANT PROJECT EXPERIENCE
- Navajo Uranium Water Contamination EPA Clean Up | Established key Utah Navajo Nation Chapter leadership, BIA, EPA, and DOE to benefit communications during the clean-up
- Navajo Nation, Trust Land Agreement | Responsible for US House communications and collaborative language with Utah Navajo Nation Chapters, BIA, Lt. Governor’s office
- Navajo Mountain Water Distribution | Provided collective support between BIA, the president of Navajo Nation, and Lt. Governors of Utah and Arizona
- Utah Recreational Land Exchange | Developed outreach strategy for federal roll between Ute Business Committee leaders, BIA, BLM, county and state leaders including SITLA, and legislative staff
- Emergency Funding for Water Systems in Uintah County | Implemented congressional communication strategy with Ute Business Committee, county, and state USDA
Seven County Infrastructure Coalition | Uinta Basin Railway Project
Section 1 Project Team

Aaron Averett, PE | Stakeholder Coordination
Aaron is experienced in the planning, design and construction management of a wide variety of projects throughout Utah and Nevada including culinary and irrigation water projects, transportation and site planning. Many of the projects Aaron has participated in include planning, funding coordination and acquisition, environmental clearance, technical design and coordination with regulatory agencies. Several of Aaron’s projects in the Uinta Basin have required high levels of community involvement and coordination, including the Uintah County Trails Master Plan, the Ashley Valley Stormwater Master Plan, and others.

RELEVANT PROJECT EXPERIENCE
• Uintah County Trails Master Plan | Project Manager
• Santa Clara City, South Hills Utility Corridor | Environmental Assessment
• Kane County Water Conservancy District, Culinary Supply Line, Tank, and Distribution System | Environmental Assessment

Bill Hjelholt | Project Advisor
Bill has been developing innovative railway projects for a quarter century; 20 years ago he led CN Rail’s first ever Design-Build project for a new terminal in Memphis, Tennessee. He led the unique Jet Fuel Transload Facility which won the President’s Award. Bill was Project Director for the Simandou Railway, a $5 billion, 400-mile greenfield project in Guinea, West Africa for Rio Tinto Iron Ore. He also led the Cote Nord Railway project, which studied several alternative alignments to multiple Iron Ore mine sites in Quebec and Labrador and developed the optimal railway design to serve them. More recently, Bill has been assisting A2A (Alberta to Alaska Railway) will all aspects of their ambitious project to link the Alaska Railroad and Pacific tidewater to the North American Railway network and the Oil Sands of Alberta.

RELEVANT PROJECT EXPERIENCE
• Alberta to Alaska Railway | Project Director ($4.5 billion capex)
• Canadian National Railway, Cote-Nord Mining Railway (Quebec and Labrador) | Project Director ($500-km heavy-haul iron ore railway, $3.5 billion capex)
• Rio Tinto, Simandou Railway (Guinea, West Africa) | Project Director (600-km heavy-haul $4.5 billion capex)
• UP, Colton Crossing (California) | Project Director
• BNSF various rail, facilities, and capacity projects | Project Manager

Mark Holder | Right-of-Way Planning Lead
Mark is HDR’s Freight Rail Real Estate Lead with over 38 years of experience in rail real estate projects including sales and marketing, acquisitions, joint ventures, eminent domain, private road crossing management, valuation, and public and private partnerships. His work history includes 30 years of real estate experience at CSX Transportation. His experience includes environmental mitigation of real property assets, GIS, timber and land management and sales to public agencies. He has extensive knowledge of leading a team and motivating a diverse, engaged and sustainable workforce. Mark has participated in and led negotiations for multiple public agency and private real estate projects.

RELEVANT PROJECT EXPERIENCE
• Negotiated sale of a former rail yard converted to an industrial park in Washington, DC | $40 million
• Positioned a former rail yard parcel in Washington DC for transition and sale for high rise residential and mixed uses development | $100 million
• Negotiated the sale of former Union Station site in downtown Chicago | $32.5 million
• Managed the strategic direction and disposition of a Class I railroad’s interest in Western Pocahontas Properties LP, a real estate, timber and mineral company | $46.4 million

Aaron is unrivaled in his experience leading large greenfield railway projects, balancing the imperatives of design, permitting, right-of-way acquisition, O&M and finance. He understands financial calculus involved in railroads; he can identify the best approach to maximize initial revenue while optimizing capital and operating costs.

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• Understands financial calculus involved in railroads; can identify the best approach to maximize initial revenue while optimizing capital and operating costs

• Expertise in funding coordination and acquisition, environmental clearance, and coordination with regulatory agencies
• Manages Sunrise Engineering’s Vernal office with a wide network of local contacts to support the project

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• Manages Sunrise Engineering’s Vernal office with a wide network of local contacts to support the project
As HDR’s National Freight Rail Director, with the authority to commit staff and resources, I am pledging to commit Mark Hemphill and Don McCammon to relocate to Utah and be devoted to the Uinta Basin Railway project until the scope of this contract is completed to the Coalition’s satisfaction. The Uinta Basin Railway project will not be delayed due to HDR’s lack of commitment or insufficient allocation of resources.

Bill Hjelholt, National Freight Rail Director, HDR
Section 2
Capability of the Consultant/Experience
Section 2 **Capability of the Consultant/Experience**

**Experience on Similar or Related Projects**

*Uinta Basin Railway Feasibility Study*
Newfield Exploration Company | Uinta Basin

- Demonstrates extremely accelerated schedule
- Demonstrates extensive knowledge of Uinta Basin
- Considerable work and knowledge can be re-purposed
- Project similar to Coalition’s Uinta Basin Railway

Newfield desired a fast-turnaround answer to understand the construction cost, environmental permitting feasibility, and revenue potential of a railroad serving Newfield and potentially other oil and gas producers in the Uinta Basin. HDR leveraged our deep knowledge of Uinta Basin topography and our ability to rapidly develop feasible railroad alignments and environmental screening to provide Newfield with a complete feasibility study in 45 days. The study included a financial model, business plan, environmental screening, and a complete pathway to achieve a license and environmental clearance from STB. The environmental process was vetted with the STB’s Office of Environmental Analysis. We also worked closely with Newfield to develop conceptual design, environmental screening, and a financial model for a crude oil and frac sand terminal that could be located at Roosevelt, Myton, Craig, or other locations. This complete package included capability to expand to accommodate other producers, using oil production forecasts developed by Newfield and other producers.

Newfield had three key goals in this feasibility study: least practical construction cost commensurate with a reasonable operating and maintenance expense, environmentally permittable with the least risk of schedule delay or lawsuits, and fastest possible time to market. HDR achieved all three goals through our expertise in choosing alignment; operating standards and engineering standards were matched to Newfield’s needs yet practical. We used our environmental and local knowledge in the Basin to avoid tribal lands, minimize impacts to sensitive areas, and meet the requirements of the local and regional federal agency offices that are gatekeepers for environmental clearance and permitting.

HDR delivered this accelerated feasibility study on schedule and proved that the true cost to build a viable, practical railroad into the Uinta Basin could be reduced substantially by choosing the best route with the correct operating and engineering standards, and that environmental clearance could be obtained on a much faster schedule than had been previously believed.

**Work completed by HDR that is available for reuse on the Coalition’s Study includes:**
- Development of a similar alignment
- Extensive desktop environmental analysis
- Development of geotechnical, hydrology and hydraulics, and geomorphology data and analysis
- Alignment and engineering data
- STB EIS and permitting plan

**PROJECT VALUE**
$700 million

**RELEVANT TEAM**
Mark Hemphill
Don McCammon
Kevin Keller
Bill Hjelholt

**YEAR COMPLETED**
2017

**REFERENCE**
Randy Hairr
Marketing Director
Newfield Exploration Co.
4 Waterway Square Place, Suite 100
The Woodlands, Texas 77380
rhairr@newfield.com
281.210.5090
Alberta to Alaska (A2A) Railway
A2A Railway Development Corporation | Alberta, British Columbia, Yukon Territory, and Alaska

• Demonstrates ability to manage extremely large and complex project
• Demonstrates understanding of STB NEPA process
• Demonstrates capabilities to set design and construction standards and optimize design for client best value
• Demonstrates consultation experience with First Nations and Tribes

The proposed 1,500 mile long A2A Railway will link northern Canada and the Alaska Railway. The railway’s primary traffic will be bitumen produced in Canada’s Oil Sands Region, along with containerized goods traveling between Asia and the central and eastern US and Canada, mineral concentrates mined in northwestern Canada and Alaska, and construction materials, motor fuels, machinery, and consumer goods consumed in northwestern Canada and Alaska. The railway is designed for up to 28 200-car trains per day in its initial phase. Economic and financial analysis of railway transportation of bitumen versus pipeline shows that rail transportation is substantially lower cost than pipeline because the bitumen does not have to be diluted for rail transportation as it does for pipelines. In recent months, HDR has:
  • Developed environmental clearance with STB authorization to construct
  • Developed a Presidential Permit Plan for the US-Canada border crossing
  • Conducted A2A’s First Nations and Independent Tribes consultations and agreements
  • Assisted with a detailed financial model and financing plan
  • Refined and improved conceptual engineering and operating plans in order to define land occupancies
  • Developed a financial and economic comparison of rail transportation versus pipeline transportation for Canadian bitumen
  • Worked with First Nations and Independent Tribes to establish successful joint ventures that include the Tribes providing services such as surveying, geotechnical investigation, and labor training
  • In support of A2A’s Canadian National Trade Corridor Fund grant application, HDR provided a detailed analysis of the costs and benefits of the project, monetized through a Cost-Benefit Analysis

CN Railway Merger and Acquisition of the Elgin, Joliet & Eastern Railway Company
Surface Transportation Board | Northeast Illinois and Northwest Indiana

• Demonstrates deep relationships with STB and knowledge of STB
• Demonstrates expertise with federal NEPA process
• Demonstrates ability to perform EIS on highly accelerated schedule
• Demonstrates ability to resolve severe public opposition

In 11 months, HDR prepared a third-party EIS to the STB for the CN and Grand Trunk Corporation’s (GTW) acquisition of the Elgin Joliet and Eastern (EJ&E). This line runs in an arc around the City of Chicago and into northwest Indiana and provided a vital link in CN’s rail corridor. HDR also performed the environmental baseline studies, preliminary engineering, operations planning, and strategic communications for the EIS, due to the owner’s need for an accelerated schedule.

HDR hosted more than 7,000 interested stakeholders at a series of public meetings to explain the proposed rail acquisition and obtain input from residents in the 60 communities along the EJ&E rail lines. A multitude of concerns — including safety, air quality, transportation and environmental issues — required explanation in the final document so STB could understand all factors that might affect the people, places and natural environment within the proposed merger area. This EIS marked the first time that members of STB made a site visit to a project and the first environmental staff briefing before the entire board.

The result was a final EIS that provided STB independent and objective information to make a fully informed decision on the rail acquisition. In the end, STB used the information to approve the merger while imposing more than 170 conditions designed to protect the public and the environment. HDR subsequently conducted extensive post-merger monitoring, assessment of compliance with merger conditions by CN, and STB consulting until April 2017, to address ongoing public and community concerns.
New Orleans & Gulf Coast Railway New Rail Corridor
FRA, New Orleans Regional Planning Commission, and Rio Grande Pacific Railroad Company
Jefferson and Plaquemines Parishes, Louisiana

- Demonstrates adherence to tight schedule for EIS
- Demonstrates expertise with federal NEPA process
- EIS and engineering process similar to Coalition’s Uinta Basin Railway

New Orleans & Gulf Coast Railway (NOGC) operates a 32-mile-long short line serving heavy industries and ports on the lower Mississippi River. In order to serve Port Plaquemines, a new megaport currently opening in stages starting with the first VLCC-capable crude oil export facility ever constructed in the US, a new 12-mile-long line is needed so that NOGC no longer runs through streets and more than 280 at-grade crossings in the New Orleans metropolitan area. The FRA is the lead federal agency in the preparation of this EIS, with the STB as a cooperating agency. HDR developed from only a “connect-the-dots concept” the alternatives analysis, preferred alignment, preliminary engineering, an FRA-administered EIS, a real estate acquisition plan, and a permitting plan for the rail line in 18 months, with FRA approval of the EIS scheduled for October 2018. HDR is currently performing conceptual engineering and environmental analysis to extend the NOGC to the Port Plaquemines’ mega-container terminal under development, and initial studies on a new 30-mile double-track mainline providing a direct connection of the container terminal to UP and BNSF.

Port Bienville Railroad Feasibility Study and EIS
FRA and Mississippi DOT | Hancock and Pearl Counties, Mississippi

- Demonstrates adherence to tight schedule for EIS
- Demonstrates expertise with federal NEPA process
- EIS and engineering process similar to Coalition’s Uinta Basin Railway

Port Bienville, located on the Pearl River and home to the US Navy’s Swift Boat force, is building a 24-mile-long greenfield freight rail line that would provide a direct connection between the Port Bienville Railroad and the Norfolk Southern, north of NASA’s John C. Stennis Space Center. This connection would provide a second Class I rail connection to Port Bienville and the Port Bienville Industrial Park which is currently only served by CSX. The FRA is the lead federal agency in the preparation of the EIS, with the STB as a cooperating agency. HDR provided planning, environmental baseline studies, permitting, real estate acquisition planning, and NEPA document development. The Record of Decision is anticipated in December 2018.

Chicago-Omaha Intercity Passenger Rail System
Iowa DOT | Illinois, Iowa, and Nebraska

- Demonstrates extremely accelerated schedule
- Demonstrates HDR’s expertise with federal NEPA process
- Demonstrates HDR’s close relationship with FRA
- EIS process similar to Coalition’s Uinta Basin Railway

HDR, in partnership with Illinois DOT, completed an EIS and preliminary engineering for construction and operation of a 470-mile passenger rail corridor from Chicago to Omaha. The corridor uses BNSF and UP railway, and leverages the existing rail infrastructure. The project is currently in design phase; several of the freight-railroad mitigation projects in Illinois have already been completed. HDR developed the EIS, engineering, and planning under the supervision of FRA in 22 months. Personal relationships with decision makers at the three host railroads and with the cooperating agencies such as USACE and USFWS, transparency and extensive communication with the public during the comments period, were key to the aggressive schedule. HDR’s deep resources pulled in more than 150 subject-matter experts from more than 40 offices to solve technical details. Mark Hemphill led planning and engineering teams, leveraged his personal relationships with the host railroads to reach early crucial decisions, and applied practical decision-matrix methods so that his team could quickly rule out costly or infeasible alternatives to the satisfaction of the DOTs and FRA. Kevin led the federal NEPA compliance work and leveraged his relationships with cooperating federal agencies to assure rapid turnarounds of their reviews. Don’s engineering oversight provided standardization of approach and design that reduced consultant cost and construction cost, and accelerated the timetable.
Hill AFB Utah Training and Test Range Rail Spur and Missile Transfer Facility
USACE - Sacramento District | Lakeside, Utah

- Demonstrates ability to manage greenfield rail project with multiple and conflicting stakeholders and evolving criteria
- Demonstrates ability to work with UP on complex new railroad project

The Utah Test and Training Range (UTTR) is in the design phase for constructing a new 13.4-mile railroad line from Lakeside, Utah, where it connects with UP to UTTR. The rail line will haul missile motor components for storage and eventual destruction. HDR prepared USACE’s Customer Concept Document, is in the process of final design, and providing construction cost estimating for the Missile Motor Receipt Storage Facilities at UTTR which includes the railroad spur. Due to the highly technical requirements of the design and its interface with the proposed and existing building systems, the loading and unloading procedures for an explosive commodity, and building interface platforms and footprint, HDR performed two 3-day on-site planning charrettes to develop a concept design that meets all functional and end-state US Air Force and US Navy requirements. The charrettes identified the main function of the end users’ activity, the number of people involved, the equipment involved, space requirements, storage requirements, communications requirements, security requirements (current and future), and any unusual civil, structural, mechanical and electrical requirements.

Uinta Basin Railway Screening Study
Six County Infrastructure Coalition | Uinta Basin

- Demonstrates extensive knowledge of Uinta Basin
- Project similar in part to Coalition’s Uinta Basin Railway
- Information developed for this project has re-use value to Coalition

The Coalition sought a reassessment of the cost and feasibility to construct a railway in the Uinta Basin, building on prior work performed by HDR for UDOT, but seeking a lower capital cost than had been inherent in the UDOT study due to its requirement that the rail line could not enter Colorado. As part of the Jones & DeMille team, HDR reassessed the 26 routes it had developed for the UDOT study, and chose three routes, all terminating near Craig, Colo., for further examination, as each had substantially reduced capital costs from the UDOT-preferred route. HDR also reassessed the UDOT study’s revenue and operating and maintenance cost forecasts, and developed a conservative business plan and pro forma. This demonstrated that the railway would be commercially viable. The study, with limited budget and an aggressive schedule, reused information from the UDOT study as much as possible. The net result was that construction costs dropped from $3.1 billion to $1.0 billion, with opportunity to further reduce costs once more detailed alignment design could be conducted, and with better knowledge of the operating plan and freight volumes that would be obtained in future studies.

Uinta Basin Transportation Study
UDOT | Uinta Basin

- Demonstrates extensive knowledge of Uinta Basin transportation
- Considerable work and knowledge can be re-purposed for Coalition

HDR prepared a transportation study that examined near- and long-term needs of state and county roads in the Uinta Basin. The project team developed a vision for the Uinta Basin Transportation System and a phasing of construction projects to support that vision. While limited analysis was performed on the county road systems, the transportation plans for Uintah and Duschesne Counties were incorporated into the County Route Project Phasing map, and incorporated into UDOT’s UPlan website. The majority of analysis for the county road systems was focused on the feasibility of a roadway connection between I-70 in Grand County and Seep Ridge Road in Uintah County; the team completed a feasibility report and made a formal presentation to the Grand County Commission for this roadway. The feasibility of extending Pariette Wash Road across the Green River to intersect Seep Ridge Road was also investigated. The state-owned routes were analyzed for safety, operations, and capacity. Thresholds were established and compared with existing and future conditions. When thresholds were exceeded, it triggered a recommendation for a project or a remediating action. Projects recommended for Phase 1 were developed to a 20% engineering level and include a scope, cost estimate, anticipated environmental impacts, and a project fact sheet.
Johansen & Tuttle Project Experience

US-40 MP 140 to 136 Vernal Construction Surveying and As-Built Survey
UDOT | Uintah County, Utah
J&T provided project control and construction surveying for highway reconstruction and road widening through the 12-mile Wash area west of Vernal. This included the staking of the project limits, roadway grading, layout of drainage and structures, and roadway alignment for pavement marking. J&T also provided the layout and grading for a new weigh station building and infrastructure. As-built plan set was also mapped and provided. J&T coordinated with the contractor and UDOT for permitting.

**PROJECT VALUE** $10 million  
**YEAR COMPLETED** 2014

**RELEVANT TEAM**  
Lee Swasey  
Brent Tuttle  
Jason Knowlton

**REFERENCE**  
John Nielson  
Staker Parson-Neilson Construction  
825 North Loop Rd.  
Huntington, UT 84528  
435.687.2494

Intersection Improvements Construction Survey
UDOT | Duchesne County, Utah
J&T provided project survey control and construction survey to layout roadway improvements at the intersection of State Roads 87 and 35 located north of Duchesne. Improvements included roadway widening to provide additional lanes, utility relocation, drainage relocation, signage and lighting. J&T also provided an as-built plan set.

**PROJECT VALUE** $1 million  
**YEAR COMPLETED** 2017

**RELEVANT TEAM**  
Lee Swasey  
Brent Tuttle  
Jason Knowlton

**REFERENCE**  
Lee Goodrich  
Staker Parsons – Burdick Construction  
1368 South 3000 West  
Roosevelt, UT 84066  
435.722.5013

Nutter Ranch Diversion Structure Design, Survey, and Inspection
Nutter Ranch | Nine-Mile Canyon, Duchesne County, Utah
The existing irrigation diversion structure was washed out in a flood that occurred in 2013. J&T developed the engineering and acquired the stream alteration permit through USDA and USACE. The stream alteration permit was granted with the request that the diversion structure allow for fish passage. A diversion structure was designed and installed that consisted of a weir structure and rock rip rap. A temporary diversion was installed to dewater the project site.

**PROJECT VALUE** $100,000  
**YEAR COMPLETED** 2014

**RELEVANT TEAM**  
Merrial Johansen  
Howard Tuttle  
Craig Johansen  
Jason Knowlton

**REFERENCE**  
Blair Eastman  
Ranch Manager  
Nutter Ranch  
PO Box 202  
Elmo, UT 84521  
435.820.8893

Management and Organization Capabilities

Our project management approach is built on trust, a clear definition of shared goals, and a mutual understanding of the necessary steps to achieve those goals.

Management Tools
Trust is achieved through transparency and effective communication. We foster transparency and communication through partnering meetings, task force meetings, weekly project team coordination meetings, and a number of electronic communication tools. Our project dashboard integrates scope-of-work activities with schedule, resources, and budget details and presents the project status to you in concise, comprehensible summaries. This allows our team to identify variances and plan corrective actions to maintain schedule and budget targets.

Our project management approach is reinforced through proven accountability measures, which can include co-location and design task forces to meet commitments and emphasize shared goals. Everything we do will be a coordinated effort on behalf of you to achieve our shared objectives.

Cost Control: The Bottom Line
Our cost control starts before project activities begin. The work scope, prepared in close cooperation with the Owner’s Engineer, becomes the blueprint for the project team. We monitor costs and progress through internal weekly accounting and team meetings. Monthly reports highlighting work status and actual-versus-scheduled progress are prepared by our Area accountant. These reports will be compared with Microsoft Project, which tracks the schedule, work plan, and HDR’s internal cost-control system, which yields a cost-to-complete. The cost-to-complete is analyzed to identify and mitigate potential problem areas before the project is over budget and the schedule has slipped.

Team Collaboration
Our team members have worked together on numerous projects: we understand how to work together, know how each individual operates most effectively, and when it’s critical to meet and work through project issues. We’ll closely collaborate with the so all project needs and schedule commitments are met. Key elements of our project management plan include:
• Using ProjectWise to share files and manage reviews.
• Discussing the project goals, lines of communication, and schedule at project initiation so all team members understand how the process will be structured.
• Holding weekly team update meetings/teleconferences during key phases of the project so issues are understood and mitigated, and schedules and goals are met.

Available Resources
Mark Hemphill’s primary role is to communicate the Coalition’s needs to his team and the team’s progress to the Coalition. He has two essential tools. The first is our Project Management Plan, with a communications procedure, which is a program he’ll use to schedule staff, as well as quality assurance/quality control (QA/QC) reviews and deliverables. This tool helps him identify which staff are available far in advance, so that he can adjust staff as needed. Our Salt Lake City office as more than 80 local staff that can provide a variety of services, from planning through construction management. Their technical expertise encompasses a bevy of disciplines including environmental, roadway, structures, rail, drainage, strategic communications, real estate, project controls and schedulers, cost estimators, GIS, and technical editing.

The second, and most powerful project management tool, is our national team of nearly 10,000 people. Technical leaders from across the country are available to make sure Mark Hemphill has adequate resources and reviewers to supply you with quality deliverables on time. No other firm has the resources by order of magnitude that HDR has to meet the challenging schedule demands of the Uinta Basin Railway project.

HDR has more than 200 dedicated freight rail staff and 300 additional environmental, right-of-way, and design professionals ready to work for you. While this will be one of our larger projects, the size in no way intimidates us. Allocating 40,000 hours of staff time over the next 18 months will not be a problem for us; we perform more than 300,000 hours of work for the Freight Railroad sector every year.

Quality Assurance/Quality Control
HDR’s approach to quality is founded on our experience with quality management processes and procedures applied on numerous projects. HDR has a corporate quality management process that is required to be implemented for all projects and is based on the fundamental principles and guidelines set forth by the ISO 9001:2008 series of international standards for quality management. This requires that all team members complete our web-based HDR University training courses on General Quality, Quality Auditor, and QA/QC Procedures; courses range from QA/QC concepts, to quality audit principles, and detailed checking procedures.

As part of our QA/QC process, HDR develops a Quality Management Program (QMP) for the program. In addition, we tailor a QMP for each project as necessary. Our QMP sets forth the QA, QC, and quality management processes and procedures. Our QMP clearly establishes the separation of QA, which is a management function, from QC which is a production function. The QMP will be based on the rail-specific QA/QC program that HDR developed several years ago and is currently used throughout HDR.

All our deliverables go through a make, check, back-check, correct, tracing check, QC review, back check of QC comments and final tracing check. We also require a review process for construction submittals reviews and responses. This process is instilled in how we conduct our business. By living “Quality,” we meet or exceed the Coalition’s requirements.

Our team implements a two-step approach for quality in our environmental documents. First, before work begins, an internal peer review team agrees on a methodology for gathering and analyzing the environmental and engineering data. Our second step involves a final review by senior managers and a technical edit of the final document. Engineering plans, specifications, calculations, reports, and other design documents are checked by an experience senior engineer. All documents are checked for conformance with the criteria, standards, and the contract.
Section 3
Approach to the Project
Section 3 Approach to the Project

Introduction
HDR and our teaming partners are focused on one goal: build your railway on time at a cost that’s commercially successful. The Coalition’s goal is an operational, commercially successful railroad by December 1, 2023. We have developed the following creative solutions for you to accomplish this goal:

- We’ve identified an all-Utah route competitive in length and cost to the Coalition’s proposed routes to Mack and Rifle, but with reduced political, environmental, and financial risks.
- We’ve included an up-front route screening step immediately after the project begins, which will satisfy the STB and reduce your cost for survey, engineering, and baseline environmental from two or three railroad lines to just one.
- We recommend a Design-Build or CM/GC approach to accelerate the railway’s time to market and reduce your up-front costs.
- We’ll leverage our 20 years of trusted relationships with the STB to accelerate and streamline their approval.
- We’ve selected design and construction standards that will substantially reduce your capital costs.
- We’ve teamed with Seven-County-area experts who have a deep understanding of the physical, environmental, political, and land-use needs of the Uinta Basin.
- We’ll leverage our deep relationships with the gatekeepers at FRA to help you obtain Railroad Rehabilitation and Improvement Financing (RRIF) financing.

We’re focused on time-to-market, low cost, and a smooth environmental clearance process
We completely agree with the Coalition’s urgency! Others have failed to appreciate that market and political opportunities aren’t static. With this in mind, we’ve developed an approach with these key features: streamlined STB approval, facilitating Design-Build or CM/GC delivery, selecting an all-Utah route, and structuring our team with expertise from firms working in the Seven Counties.

STB Approval
Design-Build or CM/GC Approach
We believe the solution to meeting the Coalition’s challenging schedule is use of Design-Build or CM/GC delivery to enable the Coalition to overlap the final design with construction. This chops nearly a year out of the schedule that would be needed for Design-Bid-Build, and meets the Coalition’s urgent time-to-market goal. We used CM/GC for UP’s accelerated $550 million Brazos Yard, enabling UP to start realizing immense operating cost savings 2 years early.

Consultants often caution clients against Design-Build or CM/GC because they think it has high cost risk. We don’t believe it will because we’re deeply experienced in railroad engineering and know how to assemble low-risk Design- and CM/GC bid packages that will give the Coalition apples-to-apples, cost-competitive bids. We can accomplish the crucial engineering within the 30% design stage. (Should the Coalition ultimately choose Design-Bid-Build, we’ve provided a cost additive to take the engineering from 30% to 100%.)

All-Utah Route
Within 30 days from Notice-to-Proceed, we will present the Coalition with a comparison of the three routes identified in the RFP, along with the all-Utah route we’ve identified. Immediately after the Coalition selects their preferred route, we will facilitate a meeting with the STB and your third-party contractor where we will explain our environmental clearance approach, why our preferred route is best, and select alternatives within that route for the ultimate EA or EIS.

This consensus will immediately address the STB’s primary concerns that this project doesn’t yet have a rock-solid plan or process, and reduces costs for screening and engineering extra railroad lines. We used this single-route approach successfully on the contentious Northern Railway Extension of the Alaska Railroad and got it approved by the STB, whereas the confusion created by multiple routes led to environmental and landowner opposition and ultimately sunk the Tongue River Railroad in Montana performed by other firms.

The Community Impact Board (CIB) may not permit its funds to be used for a railway line extending outside the borders of Utah. We have therefore identified a potential alignment between Myton and a connection to UP and BNSF near Westwater, Utah, that compares favorably in length and cost to the Coalition’s proposed routes to Mack and Rifle. A secondary concern is that the CIB may be reluctant to provide grant funding for design and permitting of infrastructure outside of Utah. This resolves that potential problem too. This route, and comparison mileages, is shown in the map figure below.

We’ve looked closely at this route in the last 3 weeks, and believe it will be similar in length and cost to the Mack route, much shorter...
(and thus much less expensive!) than the two Rifle routes. It may even be possible to engineer this route without the lengthy tunneling that may be an unavoidable cost challenge to the Mack route.

**Seven County Area Locals**

Our approach is to marry the best national expertise with the best local expertise. Our teaming partners that work in the Seven Counties understand more than just the environmental, geotechnical, and regulatory characteristics of the Basin. They know the people: the landowners, the elected officials, the business leaders, the oil and gas industry, the local offices of the federal environmental and land regulatory agencies, and the Ute Indian Tribe of the Uinta and Ouray Reservation. They’ll use their personal relationships and decades of experience to identify and solve challenges that would stymie outsiders. Our organizational structure doesn’t place our local experts to the side, but integrates them into our team. That’s why our engineering and environmental leadership will be in Utah, not isolated and oblivious thousands of miles away.

**Project Risks and Our Plan of Mitigation**

We have identified the following as the key risks to the Coalition’s schedule:

- Funding constraints
- Environmental advocacy
- Landowner opposition
- STB process delays
- Unforeseen geotechnical discoveries

**Funding Constraints**

**Employing Design-Build or CM/GC Delivery.** The CIB may limit or disburse funding in tranches for engineering, environmental clearance, and other tasks. We propose to protect against this possibility by transferring into an RRIF loan as much of the engineering cost possible by using a Design-Build or CM/GC delivery method. This will reduce schedule risk because the Design-Build or CM/GC contractor can use standardized engineering for railroad components which can be performed concurrent with construction.

**Reducing Cost with the Right Design and Appropriate Construction Standards.** Most greenfield railroads are seriously over-engineered for the economic reality of the marketplace, which results in construction cost estimates killing the project on the drawing board. Many railroad engineers default to cost-no-object textbook or AREMA standards that try to build super-railroads for markets that can’t possibly afford them. For example, we recently re-engineered a 100-mile-long railroad proposed to serve a major copper mine, using operations simulation modeling, economic forecasting, and cost-of-money Present Value analysis to show that the “textbook approach” railroad with 1.0 percent grades and broad curves had a total lifetime cost four times greater than our approach with 2.4 percent grades and tight curves. We intend to work closely with your operating and engineering planner (we intend to submit a proposal for that when you advertise that work) to choose the operating and maintenance criteria that are a best economic solution for capital cost versus operating and maintenance cost. This will give you the best possible opportunity to overcome the capital cost financing hurdle that crushes many railroad projects.

**Leveraging FRA Financing.** We are in complete agreement with the Coalition’s eagerness to obtain low-cost, rural-discount, FRA financing of its railway through the RRIF program. Three of our team leaders – Mark Hemphill, Kevin Keller, and Pamela Juliano – have deep, personal relationships with FRA policymakers and gatekeepers whose blessing will be needed for RRIF funding and CRISI grants. These relationships give you credibility with the FRA and USDOT; they’ll know when you walk in the door that you have a robust, complete, and fiscally sound project and application. Time won’t be lost or wasted in deep due-diligence dives or rework to satisfy their concerns. Our have proven success – we’ve written the applications for 19 percent of all TIGER, INFRA, FASTLANE, and CRISI funds awarded to date.

**Political or Environmental Opposition**

Colorado political trends are not favorable to oil and gas development. Your railroad may be perceived as promoting carbon-based fuel use by environmental advocates. Political opposition in Colorado, or associated land use restrictions, may stall or delay your railroad. This concern led us to identify an all-Utah route that takes Colorado out of the equation.

Other strategies to mitigate opposition to the project include:

- Take one route into the EA or EIS, to negate environmental groups’ use of a “divide-and-conquer” strategy wherein one environmental groups intentionally opposes only Route A and another intentionally opposes only Route B, in order to present the STB with an insoluble political problem.
- Manage the messaging immediately to define the project before various environmental groups get in front of it. We intend to propose on your Strategic Communications RFP, and whether we win this or not, we intend to work closely with you and the Strategic Communications team to develop messaging, fact sheets, and media and public outreach strategies.
- Carefully and consistently define and describe the project. Projects that have floundered in the EA and EIS process have often failed to carefully define why it’s being built, what is being built, how it’s being built, and where it’s being built. We already understand all four characteristics, and can help you with the consistent, concise, and correct language you need to take to the public, elected officials, and the media.

**Landowner Opposition**

An unexpected and major challenge to recent greenfield railroad projects is local landowner opposition. This delayed the Canadian Pacific’s 500-mile-long Powder River Basin Extension and the Tongue River Railroad until their market opportunity window closed; killed Nevada Power’s plan to build a 100-mile-long-railroad and coal-fired power plant near Ely, Nevada; and delayed for several years BNSF’s Abo Canyon, New Mexico double-tracking project. Our real estate acquisition strategy is designed to define where landowner opposition is likely, and inform our engineering design to skirt or mitigate effects on potential problem parcels. We will propose on your forthcoming Real Estate Acquisition RFP, and
win or lose, we will integrate real estate into our engineering and environmental approach. We will emphasize early, detailed conversations with the Coalition among our teaming partners Johansen & Tuttle, Sunrise Engineering, and Juliano Consulting, to discuss key affected landowners including the Ute Tribe, and devise strategies to solve landowner concerns.

**STB Process Delays**

We're deeply experienced on both sides of the STB NEPA process: owner’s proponent or third-party contractor. We already know what your third-party contractor needs, and we can coordinate with them immediately to avoid underlaps and overlaps in our baseline analysis and their environmental analysis. Our cost and schedule reflects our expectation of a collegial and closely coordinated relationship with the third-party contractor and the STB. We propose to meet with the STB and other environmental regulatory agencies early on, and leverage the trust they already have in HDR to develop a plan they support.

**Unforeseen Geotechnical Discoveries**

HDR’s approach includes an unusually robust geotechnical investigation up front. The Uinta Basin is characterized by rough terrain, expansive soils, and steep valley walls. A Design-Build or CM/GC approach requires reduction of geotechnical risk to avoid contractors loading their estimates with high contingencies. Accordingly, we have increased substantially our geotechnical investigation, and chose Gerhart-Cole, a geotechnical firm deeply experienced in the Uinta Basin. We will also seek to reduce or eliminate tunneling as much as possible, not only due to the high cost, but to reduce geotechnical risk and contractor contingency. Should tunnels be required, we lined up the premier railroad tunneling firm in North America, McMillen-Jacobs, who are the go-to tunnel engineers for all of the major North American freight railroads.

**Why we have the Best Approach to Deliver the Uinta Basin Railway for the Coalition**

HDR’s approach doesn’t require a complex, geographically dispersed team, or a cost proposal loaded with duplicate managers and representatives from multiple major firms. As shown on our organizational chart, all of the key positions are HDR staff, and key HDR staff will be located in Utah during the project. This reduces the Coalition’s cost, reduces schedule risk, and makes meetings and coordination simple and reliable.

HDR’s cost proposal and schedule in Section 5 and Section 6 have been carefully vetted by senior leadership in HDR who have deep experience with similar projects. **We believe in this cost proposal and this schedule. They’re doable.** We believe that our focused team, our creative approach, our STB knowledge and close collegial relationships with the STB, and the deep experience we already have with Uinta Basin railway engineering and environmental clearance, will provide the Coalition with a clear and compelling, least-risk and least-cost approach, and the best opportunity to meet the clear and compelling market need for its railway.

**Task 1. Engineering**

Our engineering approach will achieve the Coalition’s time-to-market schedule, while reducing construction cost, consultant cost, environmental permitting risk, and construction time. The principles of HDR’s approach are:

- Choose the right engineering standards to meet the Coalition’s need for the railway to be financed, commercially successful, and rapidly constructed, while being safe and reliable.
- Design-Build or CM/GC approach to achieve schedule, and to transfer consultant costs into the RRIF loan.
- Emphasize geotechnical investigation to reduce construction cost-and-time risk.
- Minimize tunneling to reduce construction cost and associated risk. Because tunneling may not be required, and tunnel engineering and geotechnical investigation is expensive, we’ve presented this as a separate option to be exercised only if tunnels are unavoidable.
- Rapid development of the conceptual engineering to enable a fast start for the Owner’s Engineer survey and environmental baseline team.
- Integrated team led from Salt Lake City.

Our proposal includes conceptual, preliminary, and final engineering of the proposed railway for a Design-Build or CM/GC approach including embankment, track, bridges, drainage structures, roadway crossings and grade-separations, train control and communications systems, operations and maintenance facilities, utilities, fencing, lighting, signage, and shipper facility trackage and site civil work. For ease of analysis of our cost proposal, we’ve created engineering tasks as follows.

**Task 1.1 Conceptual Engineering**

As previously stated, we will present the Coalition with a comparison of the three routes identified in the RFP, along with our all-Utah route within 30 days of Notice-to-Proceed. Our Route Comparison Analysis will be performed in conjunction with our environmental and real estate teams, to enable the Coalition to choose the preferred route. We will then meet with the STB and its third-party contractor to reach agreement on the route, the alternatives, and the environmental clearance approach. Simultaneously, we will develop Project Engineering Standards and an initial profile and grade of the preferred route to enable the Owner’s Engineer to quickly commence survey, the environmental team to begin the baseline environmental analysis, and the real estate professionals to develop an acquisition strategy.
The Project Engineering Standards will include:

• Typical track and embankment sections, and vertical and horizontal alignment geometry requirements
• Yard and terminal track standards
• Train speeds, siding lengths and locations and operations requirements (based on the Operating Basis of Design)
• Drainage and Hydraulic Standards
• Drainage structure, railroad bridge and highway bridge design standards
• Nomenclature and naming standards
• Signal and Communication standards
• Utility crossing standards
• Roadway at-grade and grade separated standards for Utah (and Colorado if required)
• Building and facility standards

We will adapt AREMA and UP/BNSF common standards to the least capital cost for infrastructure that is compatible with safe and efficient operation and maintenance. We will use the Operating Basis of Design provided by others, unless we are separately awarded the Operations and Maintenance Plan task. We will use Utah (and potentially Colorado) DOT standards for public road design. We assume that the Coalition’s Engineer-of-Record’s proposed alignment is high-level only and that we will develop the actual center lines. The alignment will be placed in KMZ files to be used by the Owner’s Engineer. We will identify whether tunnels are required, and if so, their location and length.

**Deliverables**

• Project Engineering Standards
• Conceptual Alignment and Profile KMZ file
• Route Comparison Analysis (in conjunction with environmental)

### Task 1.2 Preliminary Engineering

During this task, we will complete geotechnical studies, hydrology and hydraulics analysis, railroad bridge standard drawings, precast concrete culvert standard drawings, track-related standard details, roadway crossing details, utility crossing standards, train-control and communications standard drawings and details, and railroad building and facility standards. These standards will be applied to the alignment to create the preliminary plans and develop the bidding documents.

In conjunction with the environmental process, we will develop alternative alignments for environmentally sensitive sections of the preferred route, and seek refinements to alignments to avoid cultural or historically significant areas or to meet other environmental and landowner-driven needs.

For the project features, we will develop typical construction methods, note anticipated impacts and provide this information to the environmental team for the STB NEPA process.

**Tasks 1.2.1 Geotechnical and Geomorphology Studies**

We will provide geomorphological and geotechnical investigations to provide design information to compare alternative alignments, and provide geotechnical information for preliminary bridge and drainage structure design, alignment embankment design, construction materials design and project specifications to be used by the contractor. Geomorphological tasks will include desktop and corridor reconnaissance for major landform and underlying soils information to assist in corridor development and alignment refinement, including information to be used to develop the engineer’s opinion of probable construction costs. We will provide a report documenting the geomorphological results and GIS-based mapping for use with the environmental and engineering tasks. We will perform field geotechnical studies to provide soils information and foundation design information for use in preparing the bid package and reducing construction cost risk. These studies will include:

• Shallow borings or test pits at approximately ½-mile intervals suitable for use in embankment design and corrosion analysis.
• For railroad bridges over waterways 300 feet in length or less, at least one deep boring suitable for designing foundation types and anticipated foundation depths. For bridges over 300 feet but less than 600 feet in length, two deep borings will be made. The number of borings for bridges that are longer or over major river crossings shall be determined by the consultant, but no less than two shall be provided. Information on in-situ soils strength, bearing values and soils strata will be provided for each boring along with the boring log.
• Soils tests for settlement, determination of suitability of material for embankment, determination of compaction requirements will be completed and provided.
• Location of borings, test pits or other field site geotechnical work shall be shown on project mapping and included in the bid package.

**Gerhart-Cole Knows Local Soils**

Richard Buhler, born in the Basin, knows its variety of soil conditions and what it takes to successfully construct embankment in the Basin. Carol Ravano provides the tunneling expertise, if needed, to make sure there is an economically constructible design that minimizes long-term maintenance.

**McMillen-Jacbos Provides Tunneling Expertise**

Task 1.2.2 Hydrology and Hydraulics

Hydrologic and hydraulic (H&H) analyses shall be completed to determine adequate waterway openings so the railway remains passable during the specified design storms, avoids adverse impacts to adjacent properties, and does not alter the existing drainage pattern. The H&H design shall identify the stream crossing locations, quantify FEMA floodplain impacts, identify irrigation crossings, and conduct H&H analyses to determine the most economical bridge or culvert that meets the above criteria taking into account structure size, substructure, riprap, grading, and structure material costs. Separate permit applications for each bridge, culvert, or impacted stream shall be provided and permits obtained. Once final design in complete, a culvert summary table shall be provided for culverts that will not have an individual hydraulic report.
Federal FEMA requirements allow fill outside the floodway resulting in up to 1 foot of rise in the base flood elevation. The impacts to residential structures will need to be evaluated and mitigated if necessary. Fill within the floodplain and outside of the floodway will require review and signoff from the floodplain administrator. Our initial evaluation of the routes and our structure design approach to meet anticipated hydraulic requirements indicates CLOMRs or LOMRs will not be required, and have not included the work for these in our cost estimate.

We will perform hydraulic analyses for locations that meet one or more of the following criteria:

- FEMA or irrigation impacts
- Drainage area more than 100 acres
- Structure size is 48-inch diameter or greater

Task 1.2.2.1 Hydrology
We will determine design discharges using one or more of the following methods:

- Rational Method (drainage areas less than 1 square mile)
- HEC-HMS
- USGS Regional Regression Equations
- USGS stream gage
- State DOT peak discharge techniques
- FEMA Flood Insurance Studies/regulatory hydraulic models
- Irrigation ditch companies

Task 1.2.2.2 Bridge and Large Culvert Hydraulics
We will use HEC-RAS 5.0.5 or newer to analyze bridges and box culverts with a flow area 100 square feet or greater (i.e., 10x10 box). We will provide a hydraulic report for each structure requiring a HEC-RAS hydraulic analysis. The report shall summarize the location, data used, hydrologic analysis, existing hydraulics, proposed hydraulics, recommended structure size, scour analysis, and erosion protection.

Task 1.2.2.3 Culvert Hydraulics
We will use HY-8, Culvertmaster, or similar modeling software to size culverts with hydraulic openings less than 100 sq. ft., and larger than 48 inches diameter (12.5 sq. ft. hydraulic opening). The minimum culvert size under the rail is 36 inches. Culverts between 36 inches and 48 inches may also be analyzed using HY-8 or Culvertmaster. The deliverable will be a culvert summary spreadsheet.

Task 1.2.2.4 Channel Realignment Hydraulics
We will analyze channel realignments for streams identified as a blue line on the USGS topographic maps using HEC-RAS. A hydraulic memo report for each bridge with a minimum of four to a maximum of ten pages long will be submitted to the necessary permitting agencies for review and approval. The report shall summarize the location, data used, hydrologic analysis, existing hydraulics, proposed hydraulics, recommended structure size, scour analysis, and erosion protection. Local permitting agencies may require additional information or additional criteria be met to obtain permits for channel realignments.

Task 1.3 Railroad Related Buildings and Facilities
We will provide conceptual and preliminary building designs that meet recommended practice contained in AREMA MRE Chapter 6 for railway facilities required to maintain and operate the railroad in accordance with the Operating and Maintenance Plan. Pre-engineered steel buildings are assumed as the basic building type. In preparing this proposal, we’ve assumed the following facilities:

- Administration building for railroad management and train crew on-duty facilities
- Maintenance-of-way shop/locker room and garage at Roosevelt/Myon
- Maintenance-of-Way/administration near BNSF/UP connection
- Combined locomotive and railroad car, two-track maintenance building
- Locomotive fueling and sanding facility using DTL fueling

Our design will be in accordance with local building, electrical, plumbing, life safety, fire, storm drainage and local code requirements. At a minimum, facilities shall meet the latest edition of the International Building Code requirements for the facility and type of use and occupancy.

Task 1.4 Railroad Engineering
We will determine alternative alignments within the preferred route that will support the STB environmental clearance, and prepare conceptual alignments and engineer’s opinion of probable construction costs on the most feasible to enable the Coalition to select the alignment that best fits the Coalition’s goals. The engineering team will integrate with the environmental team and the third-party contractor, and provide engineering documentation necessary for the evaluation of feasible alternative alignments required in the NEPA analysis.

We will coordinate with the connecting railroads, and will include obtaining approvals from connecting railroads of the railway’s interchange trackage and interoperability of trains and interchange of rail cars. UP-standard 10% design concept interchange track plans will be prepared to obtain initial approval from UP, as owner of the connecting line also served by BNSF.

In conjunction with the Coalition’s Strategic Communications and our environmental team, we will coordinate with tribal, local, county, state and federal agencies, utility and pipeline companies for review and acceptance of our planning, design and preliminary construction documents for road realignments, at-grade road crossings, grade-separated crossings, access permits, floodplain permits, utility and pipeline crossings and other items as required by the project. Agreements and permits obtained as part of this coordination, review and acceptance process will be included in the NEPA document and as part of the tender documents.

Based on the negotiation information provided by the Coalition with commercial interests, we will develop conceptual track and site civil layouts for freight loading and unloading terminals at locations determined through commercial negotiations that are not a part of our work. These conceptual drawings and cost estimates of freight terminal trackage and site civil work will be provided to assist the Coalition in commercial negotiations with shippers. Upon the Coalition reaching agreement with the commercial entity, these terminals will be progressed through preliminary engineering to be included in the tender documents. At the Coalition’s option,
HDR can prepare conceptual preliminary and final design and cost estimates for customer crude oil loading racks, tankage, pump, spill prevention, and mass flow calculations; frac sand unloading, silo, and truck loading; tubular product unloading and laydown, and site administrative and maintenance facilities including signage, security, lighting, and utilities. We’ve excluded these customer facility elements from our bid since the size and capacity of these facilities is not known.

We will leverage our deep experience with railroad construction project procurement to lead a planning session with the Coalition to select the best procurement approach, including Design-Build, Design-Bid-Build, and CM/GC approaches. HDR assumed that a Design-Build approach will be selected in preparing this proposal, although a CM/GC approach is similar.

We will prepare tender documents for the proposed railway and engineer’s opinion of probable construction costs for fixed infrastructure elements. Our opinion of probable construction cost and documentation validating quantities and other unit cost information for the tender documents will be based on AACE Class 3. We will assist the Coalition in reviewing contractor proposals and providing comments to be used in the selection of a contractor(s) meeting the selected procurement strategy.

Johansen & Tuttle and Sunrise Engineering will lead our local efforts working with state, county and local road authorities, utilities and irrigation ditch companies for crossing agreements and developing design criteria and leading the team in the design process for these features.

**Deliverables**

- Final Engineering Design Criteria
- Draft and Final Geotechnical Report including boring logs and soils testing results.
- Final H&H memo reports for structures and drainage design for 346 culvert crossings.
- Native file format for CAD items shall be MicroStation V-8. PDF electronic files will be provided to the Coalition and the STB.
- Strip maps for routes and alignments will be 1:400 scale, each 5 feet long when plotted, showing plan and profile with aerial orthophotography background.
- Plan sheets, included with the tender package will be 1:200 scale 11x17 sheets in PDF format, with MicroStation V8 Native files provided to proposers, including:
  - Bridge plan and elevation sheets with typical sections/standardized bridge designs
  - Culvert/drainage structure standards
  - Limits of proposed work and designated excavation and embankment zones will be shown
  - 1-foot contours for existing terrain
- Plan sheets for operations and maintenance facilities:
  - Plan view, layouts, architectural programming requirements, and site location layouts will use appropriate industry standard architectural scales
- Highway crossings, both grade separated and at grade crossings, will include:
  - Plan, elevation and typical section for any bridges

**Task 2 Environmental and Permitting**

The proposed Uinta Basin Railway will require federal approval, assumed to be from the STB, prior to the commencement of construction, in the form of a Certificate of Public Convenience and Necessity and an environmental Record of Decision (ROD). STB’s Office of Environmental Analysis (OEA) is responsible for directing STB’s environmental-review process, conducting independent analyses of all environmental data, and making project impact and mitigation recommendations.

STB’s rules incorporate environmental statutes including NEPA, the Endangered Species Act (ESA) and the National Historic Preservation Act (NHPA). We assume the Coalition will engage with an STB-approved third-party NEPA contractor with successful experience with the STB EIS process, and this contractor will prepare the appropriate NEPA document, whether EA or EIS.

Our approach is based on lessons learned from our extensive experience with the STB, our experience in the Uinta Basin, and our recent common-carrier STB environmental documents in Alaska, Indiana, Illinois, and across the US. We have completed a number of environmental studies and permitting actions in eastern Utah and Western Colorado. In addition, we have prepared numerous environmental baseline studies in support of the STB environmental process. We know what the STB expects, and how to effectively coordinate with the selected third-party contractor and efficiently produce deliverables to meet their requirements. As such, our deliverables will be easily incorporated into the third-party contractor’s documents. Given our previous work in the study area, we will have a running start on the environmental baseline work, as well as the required permits, to reduce the project time line. We can build on our detailed knowledge of the environmental setting and engineering constraints to streamline the permitting process.

Our approach focuses on partnering with the Coalition, the STB, and the Coalition’s third-party contractor in development of the NEPA environmental document, by providing baseline information.
and an identification of potential impacts that may be caused by construction and operation of the alternatives identified within the preferred route.

**Task 2.1 Route Screening Selection**

Our environmental and permitting team will identify for the Coalition the important environmental criteria to assist with their selection of the best route. Potential routes will be screened for environmental, land use and permitting concerns, fatal flaws, and possible environmental hot-buttons. We are aware of likely triggers for environmental and landowner opposition, and which environmental impacts can be readily mitigated to avoid opposition. The preferred route will be identified and progressed into the NEPA process.

**Deliverables**

Route Comparison Analysis (in conjunction with engineering)

**Task 2.2 Development of Purpose and Need and Alternatives Analysis**

We will focus the preparation of the project purpose and need and alternatives screening process to meet the STB’s NEPA objectives. Given our understanding of the STB’s preferences and time constraints, developed through our 20-plus years of close work with the STB, we can develop a robust purpose and need, and quickly evaluate and screen alignment alternatives that are suggested by the public or agencies during the STB’s NEPA scoping period. Our Alternatives Analysis will be closely coordinated with engineering and the Owner’s Engineer to minimize and accelerate survey and preliminary engineering.

**Deliverables**

- Purpose and Need
- Alternatives Analysis Technical Memorandum

**Task 2.3 Baseline Resource Studies and Field Surveys**

We will conduct an evaluation of the baseline conditions, including field environmental surveys as required, for environmental resources per STB requirements. We’ve assumed a No-Build and up to two Build Alternatives for the selected route. In addition to the broader STB NEPA requirements, we will conduct a review of existing literature, previous environmental documents, maps, and other materials relevant to the proposed alignments to identify potential environmental program requirements within and adjacent to the proposed alignments. The table below summarizes our approach to conduct the baseline studies and field surveys, and the deliverables for each resource.

### Environmental Baseline Studies Table

<table>
<thead>
<tr>
<th>Resource Category</th>
<th>Description</th>
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<tbody>
<tr>
<td>Wetlands and Waters of the US jurisdictional delineation and CWA 404 Permit</td>
<td>We will review available data and perform visual field checks in support of the alternatives development and screening process. We will identify an appropriate aquatic resource survey area to encompass the NEPA alternatives. The survey area will be assessed to the degree necessary to determine the presence or absence of aquatic resources including wetlands, per the delineation manuals and guidelines established by USACE. We will also evaluate whether delineated aquatic resources would likely be under the USACE jurisdictional definition. The alignment alternatives will be designed to avoid and minimize impacts to waters of the US including wetlands, to the extent practicable. Some permanent impacts may be unavoidable, and would require permitting and compensatory mitigation. Currently, mitigation banks and fee in lieu programs are not available in the project alternative areas. We will locate suitable mitigation sites and we consider potential partners, such as local governments or the tribes, to develop successful mitigation programs. Early coordination with USACE to establish permitting strategy and potential mitigation will reduce the uncertainty.</td>
</tr>
<tr>
<td>Water resource evaluations and CWA Section 401</td>
<td>Other water resources will be identified through literature and database review and from prior field surveys and environmental documents. These resources include surface waters, groundwater, and drinking water sources. Alternative alignments will be evaluated for the presence of impaired waters as listed by Section 303(d) reports, as well as impacts to surface water rights, waters with anti-degradation provisions, groundwater protection and drinking water source protection zones.</td>
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**Deliverable**

- USACE 404 permit technical memorandum

- Water resources technical memorandum
### Environmental Baseline Studies Table (continued)

<table>
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<tr>
<th>Environmental Feature</th>
<th>Description</th>
<th>Deliverables</th>
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<tr>
<td><strong>Water quality certification</strong></td>
<td>We have extensive experience with securing state water quality certification (CWA Section 401 needed for 404 permits) which require separate agency approvals and public notice requirements. To support the water quality certification process, we will conduct coordination meetings with regulating agencies concurrent with NEPA. These meetings and subsequent water resource assessments evaluations will be prepared to support each state’s permit application process.</td>
<td><strong>Deliverable</strong>&lt;br&gt;• 401 Certification Technical Memorandum</td>
</tr>
<tr>
<td><strong>Special-status species documentation</strong></td>
<td>We will access the USFWS database to obtain an official ESA species list for the alternative alignments during the alternative screening process. We will coordinate with BLM and Utah DWR to identify sensitive species of concern in the alternative alignments and important migratory wildlife corridors. We will conduct more specific studies on the selected alignments to be incorporated into the NEPA analysis, including general biological field surveys to characterize vegetation communities and evaluate if existing conditions include suitable habitat for each species. If suitable habitat is present, we will conduct species-specific surveys in accordance with applicable guidelines and agency coordination. We will also characterize habitat suitability in the project area for eagles and migratory birds.</td>
<td><strong>Deliverable</strong>&lt;br&gt;• Biological assessment technical memorandum in accordance with ESA Section 7</td>
</tr>
<tr>
<td><strong>Cultural resources, NHPA Section 106 and USDOT Act Section 4(f) evaluations</strong></td>
<td>Cultural resources will likely be present in the area of the alignments. We will coordinate with the Utah (and potentially Colorado) SHPO, STB, BLM, USFS, and other consulting parties identified through the Section 106 process. Cultural resources include historic buildings and structures, archaeological sites, and other places of traditional cultural importance to the tribes. Cultural resources that are listed or eligible for the National Register can trigger an adverse effect use determination by STB. We will work with STB, the third-party contractor and the public to identify such properties early in the project and develop proactive plans to address any effects early in the Section 106 and NEPA process to minimize impacts to project schedule.</td>
<td><strong>Deliverable</strong>&lt;br&gt;• NHPA Section 106 and Section 4(f) technical memorandum.</td>
</tr>
<tr>
<td><strong>Paleontological evaluation</strong></td>
<td>The Uinta and Duchesne River formations are located in the Uinta Basin. These rock units and their diverse fossil assemblages have great scientific importance and interest to vertebrate paleontologists. We’ll coordinate with the Utah Geological Survey office, which includes paleontology (and the office’s Colorado counterpart if required), as well as BLM and USFS paleontology offices, to ensure that state and federal statues, including the Paleontological Resources Preservation Act, are followed in relation to protection of paleontological resources.</td>
<td><strong>Deliverable</strong>&lt;br&gt;• Paleontological evaluation technical memorandum</td>
</tr>
<tr>
<td><strong>Tribal coordination</strong></td>
<td>The alternative alignments could traverse the Uinta and Ouray Reservations in Utah, which may trigger consultations and coordination with the BIA. BIA may then become a cooperating agency for development of the STB NEPA document. Cooperating agencies for NEPA actively participate in the development of the NEPA document and oftentimes require additional analysis specific to their purview. Coordination with the tribes for approval to construct on the reservation has the potential to require mitigation or design modifications, and therefore increase costs.</td>
<td><strong>Deliverable</strong>&lt;br&gt;Tribal coordination technical memorandum</td>
</tr>
<tr>
<td><strong>Environmental justice evaluation, EO 12898</strong></td>
<td>We have extensive experience applying Executive Order 12898 to identify and address disproportionately high and adverse human health or environmental justice (EJ) effects of a project on minority and low-income populations. Our EJ specialists understand how to develop a strategy for implementing EJ for rail projects as well as for tribal lands. Our evaluation approach will not just consider placement of the rail line as it relates to minority and low-income populations, but it will also consider if the rail line poses new environmental threats to communities already experiencing environmental or health disparities.</td>
<td><strong>Deliverable</strong>&lt;br&gt;• Environmental justice technical memorandum</td>
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### Environmental Baseline Studies Table (continued)

<table>
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<tr>
<th>Study Area</th>
<th>Description</th>
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<tr>
<td><strong>Socioeconomic evaluation</strong></td>
<td>Our approach to the socioeconomic evaluation will be to review existing economic studies and use as much existing data as possible. In addition, we will identify the impacts of the proposed alignment alternatives and seek opportunities to reduce or minimize these impacts on established destination and convenience businesses, local and regional economies, employers, employment and overall economic characteristics. The impacts to property owners from parcel acquisition will be identified, along with appropriate relocation assistance and acquisition policies. This task will be coordinated with our real estate acquisition strategy. <strong>Deliverable</strong>&lt;br&gt;• Socioeconomic technical memorandum</td>
</tr>
<tr>
<td><strong>Clean Air Act (CAA) and air quality analysis</strong></td>
<td>The alternative project areas are in attainment for five of the six “criteria pollutants.” In the spring of 2018, EPA designated the Uinta Basin as a marginal nonattainment area for ozone. Our team has experience applying CAA in accordance with NEPA and will work with STB and EPA to develop the best modeling protocol for this project knowing that only one criteria pollutant is not in attainment. <strong>Deliverable</strong>&lt;br&gt;• Air quality technical memorandum</td>
</tr>
<tr>
<td><strong>Land use</strong></td>
<td>The alternative project areas include several counties and cities in Utah (and potentially Colorado) in addition to the Uinta and Ouray reservation lands. Land use within these jurisdictions varies but should allow for a new railway alignment. The compatibility of existing and planned land uses with a rail proposal is often associated with noise impacts. Other potential land-use compatibility impacts include disruption of communities, relocations, and induced socioeconomic effects. Our team understands how to effectively use data from federal, state, local, or regional planning documents, including general plans, area plans, and master plans, to analyze and carefully cross-reference effects from the project, while avoiding duplication of efforts. <strong>Deliverable</strong>&lt;br&gt;• Land use technical memorandum</td>
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<tr>
<td><strong>Noise and vibration analysis</strong></td>
<td>The Noise Control Act of 1973 established a national policy to promote an environment free from noise that jeopardizes health and welfare. Our team has experience identifying potential noise and vibration sensitive receivers and conducting noise analysis for rail projects. Our engineering and design elements will aim to reduce or avoid potential noise and vibration impacts per regional, local, and federal (FRA and STB) regulations and guidelines. Our team is also knowledgeable on FRA regulations to address noise impacts on wildlife and livestock. We will use a screening distance of approximately 1,200 feet for the noise analysis since existing noise conditions are relatively low. <strong>Deliverable</strong>&lt;br&gt;• Noise and vibration analysis technical memorandum</td>
</tr>
<tr>
<td><strong>Multi-agency coordination</strong></td>
<td>Our successful delivery of environmental permits will bring value by focusing the public and regulating agencies on the critical issues of this project. The environmental planning process will be structured and implemented to consider issues and concerns raised by jurisdictional agencies in a timely, clear and concise manner. Early coordination and outreach to regulating agencies and key stakeholders, in coordination with the STB third-party contractor, will identify key issues, concerns, and mitigation measures at the outset and provide maximum time to work through issues. <strong>Deliverable</strong>&lt;br&gt;• Agency coordination and involvement technical memorandum</td>
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<tr>
<td><strong>Stakeholder coordination and public comment</strong></td>
<td>Participation and response to stakeholder and public comments will be transparent. The NEPA process, as well as several permits, include a public notice and comment period. There is potential for significant comments from the public and stakeholders that may warrant addressing issues through additional analysis or coordination that could delay the planning and permitting process. To minimize this type of rework, we will coordinate with the strategic communications consultant, STB, the Coalition and the STB third-party contractor, to provide data for public and stakeholder events. <strong>Deliverable</strong>&lt;br&gt;• Stakeholder and public coordination technical memorandum</td>
</tr>
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</table>
Task 2.4 STB and 3rd Party Contractor Coordination
The environmental and permitting team will work with the Coalition, the STB and the third-party contractor to coordinate, clarify and assist during the preparation of the NEPA document.

**Deliverables**
- Clarifications to the purpose and need, alternatives analysis and baseline resource studies as required (We commit to responding back to STB and the third-party contractor within 48 hours of the requested clarification, or in such a time line when the clarification can be provided.)

Task 2.5 Environmental Permitting
We will expedite the environmental permitting process with early agency coordination and communication, strong scientific analysis and evaluations, and coordination with STB and the third-party contractor during the impacts and mitigation analysis conducted for the NEPA process. Following the ROD, we will obtain the required environmental permits as listed below.
- CWA Section 404 (Wetlands and Waters of the US)
- Stream Alteration Permits (Utah) and RGP 37 Stream Stabilization Projects in Colorado if needed
- CWA Section 401
- CWA Section 402 Construction and Industrial Stormwater Permits
- NHPA Section 106 and Section 4(f) of the Transportation Act

**Deliverables**
- Environmental permit applications

Task 3 Right-of-Way Planning
Our extensive experience with railroad property acquisition shows that many landowners have these realistic and concrete objections:
- Loss of direct access to the road network
- An uneconomic remnant of land
- Noise pollution
- Access to irrigation water

Other landowners question the legality of appropriating private property for any reason; are opposed to economic changes in their area; or have environmental, social, and quality-of-life concerns. We expect to encounter all of these objections when the decision is made to start acquiring property. Our Real Estate Acquisition Strategy Plan will be a tremendous aid to the Coalition in devising strategies to address these objections, by delineating the proper timing for each stage of the real estate acquisition process, and having a consistent and effective public messaging strategy.

We can, at the Coalition’s option, place into action a full-service right-of-way team able to deliver high-quality services from comprehensive turnkey acquisition services to construction liaison support. We have provided such real estate services for such programs as BNSF’s immense nationwide rail expansions over the last 20 years, five Design-Build projects for UDOT, and UP’s Chicago to St. Louis high-speed rail project.
Section 4
Local Knowledge and Experience
Section 4 Local Knowledge and Experience

HDR team members have worked on a vast variety of projects in the Uinta Basin and have established relationships with intergovernmental and community leaders in the Uinta Basin and southeastern Utah, many of whom are the same stakeholders involved in this project including FRA; county governments; USDA and NRCS local, state, and national offices; the Utah SHPO offices and other Section 106 consulting parties; and local midstream and oil production companies. HDR has completed all of the recent engineering and environmental studies for railroads in the Uinta Basin, and many of the highway projects, including the Uinta Basin Transportation Study and the US-40 Corridor Study. Our teaming partners Sunrise Engineering, Juliano Consulting, and Johansen & Tuttle provide strong local connections to the Uinta Basin.

HDR Uinta Basin Experience

Uinta Basin Railway Feasibility Study
Newfield Exploration Company | Uinta Basin, Utah

Newfield hired HDR to prepare a feasibility study of a railroad serving Newfield and potentially other oil and gas producers in the Uinta Basin.

LOCAL RELATIONSHIPS DEVELOPED
- BLM, USDA, and USDOT regional, state, and national levels
- Navajo Nation Chapter Presidents
- Ute Tribe Business Committee
- BIA Trust

UNDERSTANDING OF LOCAL ISSUES
- Deep knowledge of Uinta Basin topography and its ability to complete feasibility study in 45 days.
- The environmental and STB process was discussed and vetted with the STB Office of Environmental Analysis.
- Developed conceptual design, environmental screening, and financial model for a crude oil and frac sand terminals.

Screening Study for the Uinta Basin Railway
Six County Infrastructure Coalition (sub to Jones & DeMille) | Uinta Basin, Utah

The Coalition sought a reassessment of the cost and feasibility to construct a railway in the Uinta Basin, building on prior work performed by HDR for UDOT. As part of the Jones & DeMille team, HDR reassessed the 26 routes and chose three routes that substantially reduced capital costs and demonstrated the railway’s commercial feasibility.

LOCAL RELATIONSHIPS DEVELOPED
- Six County Infrastructure Coalition
- Newfield Exploration, Crescent Point Energy, EP Energy

UNDERSTANDING OF LOCAL ISSUES
- The study demonstrated that without UDOT’s route constraints that construction cost could be reduced from $3.1B to $1B.
- Confirmed with Uinta Basin energy producers that the railway is essential for their production and financial goals.
- Found viable, economical routes that minimized impacts on agricultural land and avoided tribal lands.
- Developed a sophisticated understanding of environmental hot-button issues and its environmental screening showed these issues could be minimized.

Uinta Basin Rail Feasibility Study
UDOT | Uinta Basin, Utah

HDR prepared a feasibility study of a new 100-mile rail line into the Uinta Basin from the existing Class 1 railroad alignments. HDR evaluated 26 potential new railroad alternatives using a combination of GIS engineering and a Preliminary Environmental Linkage (PEL) tool. Using GIS and the PEL tool, HDR was able to determine preliminary impacts in a 2-month period.

LOCAL RELATIONSHIPS DEVELOPED
- County governments
- State agencies including UDOT, Utah Office of Energy Development, Utah Division of Indian Affairs, Department of Environmental Quality, and Utah Division of Oil, Gas, and Mining, and of Forestry, Fire, and State Lands
- State and Federal Legislators
- Federal agency directors, BLM, BIA (Trust), Under Secretaries of USDOT, and FRA, and Assistant Secretary USDA

UNDERSTANDING OF LOCAL ISSUES
- Worked with key stakeholder groups for timely, accurate messaging.
- Understanding of topography and used local state and federal data to determine the preliminary environmental impacts of each alignment.

Sunrise Engineering Uinta Basin Experience

Daggett County Trails Master Plan
Seven County Infrastructure Coalition | Daggett County, Utah

The Coalition, in conjunction with Daggett County and Utah State Parks, contracted with Sunrise Engineering to create a trails master plan that would address existing conditions, potential improvements and economic development factors concerning trails in Daggett and Uintah Counties. Due to the nature of land management in Daggett and Uintah Counties, this plan required coordination with USFS and BLM to develop possible improvements. Public surveys and meetings helped to determine what local and tourist interests in trails should be included in the overall plan. Implementations plans included preliminary environmental concerns, feasibility, concept designs and cost estimates for a number of projects. Economic plans included suggestions for local businesses to increase tourist stay time and improve services for those using the trails in Daggett County.

RELEVANT LOCAL RELATIONSHIPS DEVELOPED
- Worked with town councils, county commissioners, and county staff in Daggett and Uintah Counties.
UNDERSTANDING OF LOCAL ISSUES

- Economic development in Daggett County is needed and recommendations and solutions associated with the rail there will be welcomed. Sunrise Engineering’s local perspective makes them sensitive to the current conditions and possible solutions that could affect Daggett County. It is likely that most benefits the rail could bring to Daggett County are or could already be met by the rail in southern Wyoming, but we will watch for and recommend any additional uses that could positively affect Daggett County.

Uintah County Trails Master Plan

Sunrise Engineering completed a Uintah County Trails Master Plan for the Uintah Transportation Special Service District and UDOT. The purpose of this master plan was to inventory, evaluate and improve alternative transportation options in Uintah County by providing solutions for enhanced and accessible trails and routes in the small and non-urban areas and to improve public land connectivity from the same areas to provide for safe and diverse alternative transportation opportunities. Results of the plan were an inventory of existing trail conditions, identification of deficiencies, proposals to address these deficiencies, an evaluation and prioritization of projects, methods for coordination between the many entities involved, and a clearly defined implementation plan for the prioritized projects. Recommended projects ranged from sidewalk and shoulder improvements in Vernal and Naples Cities to new or improved trailheads on public lands in Uintah County.

RELEVANT LOCAL RELATIONSHIPS DEVELOPED

- This project was backed by, and required coordination with the Dino Trails Committee, the trails advisory committee in Uintah County and Vernal City. This committee included the cities of Vernal and Naples, Uintah County, Uintah Transportation Special Service District, Uintah Recreation District, BLM, Ashley National Forest, Dinosaur National Monument, Utah State Parks, Vernal Area Chamber of Commerce, TriCounty Health Department, Northeastern Utah Mountain Biking Club, Uintah Basin Backcountry Horsemen, Uintah Trails Working Group, Uintah 4H, Trout Unlimited and others. Project Partners on this project included UDOT, Uintah Transportation District, Uintah County, Vernal City, Naples City, and Ballard City. Contacts from each of these entities are still working with the DinoTrails Committee and Sunrise Engineering to complete many of the projects suggested in the Trails Master Plan.

UNDERSTANDING OF LOCAL ISSUES

- Working with each of the local entities allows Sunrise Engineering the opportunity to talk with many leaders in these communities. The Uinta Rail has been a topic of many conversations and these include concerns, hopes, suggestions and other relevant information that will help to lay a positive foundation for the Uinta Rail project.

Juliano Consulting Uinta Basin Experience

Navajo Trust Fund Community Field Relations

Navajo Nation Trust Recipients of the Utah Chapters | San Juan County, Utah

As a congressional staffer, Pamela Juliano was asked to develop an outreach strategy to bring stakeholders together for the purpose of developing language that would identify how Trust Funds would be managed for Utah Navajos.

LOCAL RELATIONSHIPS DEVELOPED

- Navajo President and Chapter Representatives
- County Commissioners
- Local Business and Community Leaders

UNDERSTANDING OF LOCAL ISSUES

- Responsible for collaborative language with Utah Navajo Nation Chapters, BIA, President Joe Shirley Jr’s Office, Lt. Governor Greg Bell, and State and Federal Legislators.
- Managed communications with Utah Navajo Chapters, BIA, and other for congressional hearing process.

Uintah Recreation Land Exchange

BLM | Uintah and Grand County, Utah

Pamela Juliano developed an outreach strategy to coordinate efforts for a favorable land exchange.

LOCAL RELATIONSHIPS DEVELOPED

- Ute Business Council and Energy – Chairwoman Irene Cuch, Uintah County
- BLM including State Directors Juan Palma and Selma Sierra
- Utah State Institution Trust Lands (SITLA)
- Community stakeholders
- Understanding of Local Issues
- Managed BLM and tribal communications process and developed stakeholder outreach strategy
- Established Ute Business Council relations with SITLA, BIA, and federal legislators.
- Established collaborative effort with Navajo Chapter Presidents, BIA, BLM, and Department of Education.

Johansen & Tuttle Uinta Basin Experience

J& T has served the rural communities of eastern Utah for more than 45 years. They provide the team established relationships and understanding of local issues through their work on numerous projects including:

- UDOT US-191 Slide Repair Project, Duchesne County
- UDOT US-40 Road Reconstruction, Uintah County
- Nutter Ranch Diversion Structure, Duchesne County
- Green River City Industrial Park Master Plan, Green River City, Emery County
- Cottonwood Irrigation Pressurized Irrigation System, CCCIC, Castle Dale, Carbon County
Section 5

Cost
## Section 5 Cost

Our fee, which includes our labor, overhead and profit, subconsultant costs, and direct expenses for each of the three project elements is:

**Task 1** Engineering: $5,958,000  
**Task 2** Environmental & Permitting: $2,895,000  
**Task 3** Right-of-Way Planning: $61,000  
**Total**: $8,914,000

HDR’s detailed hours per task, key personnel categories, subconsultant labor, and direct expenses for the engineering work is shown in Table 5-1 below:

### Table 5-1. Engineering Key Personnel Hours by Primary Scope Elements and Summary of Costs

<table>
<thead>
<tr>
<th>Task Description Resource:</th>
<th>Engineering Labor Hours Per Job Classification</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Project Manager</td>
<td>Deputy Project Manager</td>
<td>Project Controls</td>
<td>Project Advisors</td>
<td>Task Leaders</td>
<td>CAD</td>
<td>Other Staff</td>
<td>Administration</td>
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<tr>
<td>Project Management</td>
<td>500</td>
<td>1,000</td>
<td>1,000</td>
<td>96</td>
<td>1,600</td>
<td></td>
<td></td>
<td></td>
<td>4,196</td>
</tr>
<tr>
<td>Route Screening and Preferred Route Selection</td>
<td>40</td>
<td>40</td>
<td>120</td>
<td>221</td>
<td>421</td>
<td></td>
<td></td>
<td></td>
<td>861</td>
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<tr>
<td>STB Meeting-Preferred Route Selection</td>
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<td>20</td>
<td>80</td>
<td>40</td>
<td>40</td>
<td></td>
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<td>122</td>
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<tr>
<td>Conceptual Engineering</td>
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<td>40</td>
<td>200</td>
<td>100</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td>600</td>
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<tr>
<td>Preliminary Engineering</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>1,195</td>
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<tr>
<td>Develop Track and Structures Standards</td>
<td>40</td>
<td>100</td>
<td>328</td>
<td>733</td>
<td>332</td>
<td>1,533</td>
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<tr>
<td>Track and Alignment Refinement</td>
<td>20</td>
<td>100</td>
<td>569</td>
<td>910</td>
<td>1196</td>
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<tr>
<td>Bridge And Structures</td>
<td>50</td>
<td>200</td>
<td>104</td>
<td>485</td>
<td>645</td>
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<tr>
<td>Communication and Signals</td>
<td>10</td>
<td>10</td>
<td>20</td>
<td>40</td>
<td>80</td>
<td>410</td>
<td>$100,000</td>
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<tr>
<td>Utilities and Pipelines</td>
<td>10</td>
<td>20</td>
<td></td>
<td></td>
<td>580</td>
<td>610</td>
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<tr>
<td>Connecting Railroad Coordination</td>
<td>40</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
<td>80</td>
<td>$24,000</td>
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<tr>
<td>Terminal Track and Civil Conceptual Engineering</td>
<td>8</td>
<td>40</td>
<td>80</td>
<td>100</td>
<td>60</td>
<td>288</td>
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<td>Coalition Shipper Terminal Negotiations</td>
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<td>20</td>
<td>40</td>
<td>80</td>
<td>40</td>
<td>200</td>
<td>$30,000</td>
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<tr>
<td>Geotechnical Work</td>
<td>8</td>
<td>20</td>
<td>300</td>
<td></td>
<td>3,767</td>
<td>4,095</td>
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<tr>
<td>Hydrology and Hydraulics</td>
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<td>3,800</td>
<td>5,168</td>
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<tr>
<td>Support NEPA Process</td>
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<td>200</td>
<td></td>
<td></td>
<td></td>
<td>250</td>
<td>$71,000</td>
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<td></td>
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<tr>
<td>Final Permitting</td>
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<td>150</td>
<td>150</td>
<td></td>
<td>450</td>
<td>$80,000</td>
<td></td>
<td></td>
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<tr>
<td>Final Engineering For D-B Packages</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1,195</td>
<td>$4,576,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Track</td>
<td>40</td>
<td>100</td>
<td>1,100</td>
<td>1,600</td>
<td>1,000</td>
<td>3,840</td>
<td>$479,000</td>
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<tr>
<td>Bridge and Structures</td>
<td>51</td>
<td>60</td>
<td>180</td>
<td>640</td>
<td>900</td>
<td>1,831</td>
<td>$230,000</td>
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<tr>
<td>Communication and Signals</td>
<td>20</td>
<td>40</td>
<td>60</td>
<td>80</td>
<td>200</td>
<td>1,004</td>
<td>$34,000</td>
<td></td>
<td></td>
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<tr>
<td>Utilities and Pipelines</td>
<td>20</td>
<td>80</td>
<td></td>
<td></td>
<td>200</td>
<td>300</td>
<td>$60,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Terminal Track and Civil Engineering</td>
<td>10</td>
<td>40</td>
<td>40</td>
<td>120</td>
<td>60</td>
<td>270</td>
<td>$39,000</td>
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<td></td>
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<tr>
<td>Roads and Grade Separations</td>
<td>10</td>
<td>200</td>
<td>100</td>
<td>180</td>
<td>920</td>
<td>1,410</td>
<td>$231,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tender Package Plans and Specs</td>
<td>50</td>
<td>200</td>
<td>100</td>
<td>200</td>
<td>200</td>
<td>750</td>
<td>$135,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tender/Bid and Contracting</td>
<td>100</td>
<td>200</td>
<td>100</td>
<td>200</td>
<td>200</td>
<td>800</td>
<td>$148,000</td>
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<td><strong>Subtotal:</strong></td>
<td><strong>1,195</strong></td>
<td><strong>2,090</strong></td>
<td><strong>1,100</strong></td>
<td><strong>96</strong></td>
<td><strong>6,258</strong></td>
<td><strong>14,021</strong></td>
<td><strong>31,551</strong></td>
<td><strong>$4,576,000</strong></td>
<td></td>
</tr>
</tbody>
</table>

### Expenses

**Engineering Travel**: $250,000  
**Geotechnical Drilling/Exploration**: $1,132,000  
**Total**: $3,558,000
HDR’s detailed hours per task, key personnel categories, subconsultant labor, and direct expenses for the environmental work is shown in Table 5-2 below:

Table 5-2. Environmental Key Personnel Hours by Primary Scope Elements and Summary of Costs

<table>
<thead>
<tr>
<th>Task Description</th>
<th>Resources:</th>
<th>Environmental and Permitting Labor Hours Per Job Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Project Manager</td>
<td>Deputy Project Manager</td>
</tr>
<tr>
<td>Project Management</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>Route Screening and Preferred Route Selection</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>STB Meeting-Preferred Route Selection</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>STB NEPA Process (Early Action Items)</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>STB NEPA Process (Early Action Items)</td>
<td>100</td>
<td>40</td>
</tr>
<tr>
<td>STB NEPA Scoping</td>
<td>100</td>
<td>250</td>
</tr>
<tr>
<td>Environmental Field Surveys</td>
<td>100</td>
<td>160</td>
</tr>
<tr>
<td>Environmental Baseline Studies</td>
<td>100</td>
<td>500</td>
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<tr>
<td>Permitting / Programmatic Agreements</td>
<td>250</td>
<td>250</td>
</tr>
<tr>
<td>STB Draft EIS</td>
<td>80</td>
<td>80</td>
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<tr>
<td>STB Final EIS</td>
<td>80</td>
<td>80</td>
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<tr>
<td>Preliminary Engineering</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>Subtotal:</td>
<td>1,168</td>
<td>168</td>
</tr>
</tbody>
</table>

Expenses

| Environmental and Permitting Travel                          | $250,000   |
| Total:                                                       | $2,895,000 |

HDR’s detailed hours per task, key personnel categories, subconsultant labor, and direct expenses for the environmental work is shown in Table 5-3 below:

Table 5-3. Right-of-Way Planning Key Personnel Hours by Primary Scope Elements and Summary of Costs

<table>
<thead>
<tr>
<th>Task Description</th>
<th>Resources:</th>
<th>Right-of-Way Planning Labor Hours Per Job Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Project Manager</td>
<td>Deputy Project Manager</td>
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<tr>
<td>Right-of-Way Planning</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Total:</td>
<td>50</td>
<td>50</td>
</tr>
</tbody>
</table>
Our cash flow, shown in Figure 5-4 above, is based on the above level of effort being expended in accordance with the detailed critical path schedule shown in Section 6. This cash flow documents the expenditures as they occur, not when the work would be invoiced to the Coalition.

**Explanation of Pricing**
We understand the following work will be provided by the Coalition to HDR, or separately contracted with HDR:

- Operating and Maintenance Planning
- Landowner Access Agreements
- Aerial Topographic Mapping and imagery
- Utility Mapping
- Refinement of Conceptual Alignments for Mapping Purposes
- Owner Program Management Services
- Locations and Requirements of Freight Terminals
- Shipper Facilities at Freight Terminals other than trackage
- Strategic and Public Communications
- Real Estate Acquisition Services
- Third-Party Contractor Preparation of the EA or EIS

HDR has prepared a detailed scope of work that supports this cost estimate that lists inclusions and assumptions.

**Proposal Alternatives**

**Tunnels**
One or more of the proposed routes may not require tunnels. Accordingly, our base proposal does not include cost for the engineering, geotechnical, and environmental effort required for tunnels. If during the Route Screening and Preferred Route Selection a route with one or more tunnels is selected, HDR can provide the engineering, environmental, deep borings and additional geotechnical work need to supply geologic information for the tunnel design and the tunnel design work including portals, venting, handling of groundwater, lining systems, lighting, refuge areas, and floor design, for Design-Build tender document. The work would occur concurrently with the already ongoing work; no impact to the project schedule is anticipated. Because tunnel length and quantity is not known, the additional cost below is representative and based on a single 5.5-mile-long tunnel for Design-Build tender:

- Additional geotechnical effort: $622,000
- Additional tunnel design effort: $1,590,000

**Design-Bid-Build or CM/GC Procurement Process**
HDR’s proposal basis is a Design-Build procurement process that incorporates the stipulations from the STB NEPA environmental process and an approximate 30% level of complete for engineering but also includes key elements including completing the field geotechnical analysis for the track and bridge construction to reduce Coalition’s risk of change orders during the contractor-led final design and construction effort. It also includes review of a Design-Build contractor’s final 100% design documents. HDR’s costs for CM/GC would be similar to Design-Build, but may include additional time to work with the selected General Contractor for value engineering, revision to standards, etc.

We have also estimated the effort to provide a 100% design package for Design-Bid-Build. The additional effort represents plans being developed to 100%. We feel from a schedule standpoint, there is a 3- to 4-month trade off on completion of final design and startup of construction, but the goal of running trains on December 1, 2023 is still fully achievable. HDR and its teaming partners have the personnel on hand to perform this work to meet the schedule, if requested by the Coalition. The additional effort is estimated as:

- Engineering: $3,992,000
- One 5.5-mile long tunnel (if required): $1,670,000
Section 6
Schedule Control
Section 6 Schedule Control

Examples of Similar Projects Completed within Tight Time Constraints

1. Uinta Basin Railway Feasibility Study
   Newfield Exploration

   SCHEDULE COMPLIANCE ACCOMPLISHMENTS
   Completed feasibility study, route analysis, environmental, engineering, real estate review, and financial analysis in 45 days.

   RELEVANT TEAM
   Mark Hemphill, Don McAmmon, Kevin Keller

   REFERENCE
   Randy Hairr
   Marketing Director
   Newfield Exploration Co.
   4 Waterway Square Place, Suite 100
   The Woodlands, Texas 77380
   rhairr@newfield.com
   281.210.5090

2. CN-EJ&E Merger EIS
   Canadian National Railway

   SCHEDULE COMPLIANCE ACCOMPLISHMENTS
   Completed EIS in 11 months including baseline work and engineering.

   RELEVANT TEAM
   Mark Hemphill, Kevin Keller

   REFERENCE
   Victoria Rutson
   Director, Office of Environmental Analysis
   Surface Transportation Board
   395 E Street SW
   Washington, DC  20423
   202.245.0295

3. Port Bienville Environmental Study
   FRA and Mississippi DOT

   SCHEDULE COMPLIANCE ACCOMPLISHMENTS
   Completed two-phase FRA EIS and achieved ROD in 3 years.

   RELEVANT TEAM
   Kevin Keller

   REFERENCE
   Marc Dixon
   South Central Regional Manager
   Federal Railroad Administration
   Office of Railroad Policy and Development
   Work: 202.493.0614
   Cell: 202.380.6981

4. Chicago to Omaha Passenger Rail EIS
   Iowa DOT

   SCHEDULE COMPLIANCE ACCOMPLISHMENTS
   Completed EIS and achieved ROD in 14 months.

   RELEVANT TEAM
   Mark Hemphill, Kevin Keller

   REFERENCE
   Tamara Nicholson, PE
   Director, Office of Location & Environment
   Iowa DOT
   800 Lincoln Way
   Ames, IA 50010
   Tamara.Nicholson@dot.iowa.gov
   515.239.1798

5. Brazos Yard
   Union Pacific Railroad

   SCHEDULE COMPLIANCE ACCOMPLISHMENTS
   Achieved Section 404 environmental clearances in 72 days start to finish.
   Reorganized project from CM/GC to Design-Bid-Build in under 30 days when requested by owner.
   Developed final design, environmental clearances, and permits in under 2 years.
   Completed EIS and achieved ROD in 14 months.

   RELEVANT TEAM
   Mark Hemphill, Kevin Keller

   REFERENCE
   Michael J. Zucker
   Director Civil / Track Construction
   Union Pacific Railroad
   1400 Douglas Street STOP 0910
   Omaha, NE 68179
   402.544.3281
   Mjzucker@up.com
Appendix

Resumes
Mark W. Hemphill  
Project Manager

Mark Hemphill leads HDR’s Railway Consulting Group, which develops greenfield railroads and new freight and passenger services on existing railroads for public and private clients. He applies his broad expertise in railway operations, engineering, environmental clearance, and commercial development to provide a complete development process from initial concept through detailed design and permitting to commercial strategy and agreements with railroads, shippers, and government funding agencies.

Mark’s industry experience includes service to the U.S. Government in 2005-2006 as the senior railway advisor to rebuild the railways in Iraq; as a senior manager in the operating and mechanical departments of Class I and short line railroads, and as a consultant to BNSF Railway, Union Pacific Railroad, CSX Transportation, Ferromex, and numerous ports and natural resource development companies for strategic railway projects and new railway lines.

**Relevant Experience to the Seven County Infrastructure Coalition**

**Newfield Exploration, Uinta Basin Railway.** Mark led the team that developed the lowest-practical cost, 170-mile long new railway from Craig, CO, to Roosevelt, UT. Mark’s team developed for Newfield a pro forma, business plan, financial performance forecast, rail traffic forecast, conceptual engineering, operations plan, environmental fatal flaws analysis, and STB authorization plan. Total estimated construction cost of the railway, including engineering, environmental clearance and permitting, real-estate acquisition, and development costs, was $700 million. The principal reduction in cost from prior studies was due to a more detailed alignment study, and matching operating and engineering standards to the rail freight volumes likely to be generated by the Uinta Basin rather than the standards used for high-volume, higher-speed rail lines. Mark’s team also developed a crude oil and frac sand transload facility for Newfield that could serve either Newfield alone or all the producers in the Uinta Basin. The facility was adaptable to sites including Roosevelt, Myton, Jensen, Craig, or other locations.

**Six County infrastructure Coalition, Railway Reassessment.** Mark led the team that reassessed a prior feasibility study conducted for Utah Department of Transportation, which had resulted in excessively high construction cost for the Uinta Basin Railway due to Utah DOT’s request that the line be completely contained within the borders of Utah. This high-level study, using the same engineering standards as the UDOT study but with the freedom to route the line into a lower-cost alignment into Colorado, reduced construction cost from approximately $3 billion for the UDOT alignment, to approximately $1 billion by choosing an alignment to Craig.

**Utah Department of Transportation, Uinta Basin Railway.** Mark led the engineering, operating, and economic team for this study, the goal of which was to develop and complete an Environmental Impact Statement for the railway. HDR developed 26 conceptual routes and construction cost estimates for the railway including origins in Craig, Rifle, and Mack, CO, near Green River, WY, and numerous locations in Utah ranging from Westwater to Wellington, Soldier Summit, and Ogden. At the direction of Utah DOT, only all-Utah alignments could be considered, thus only the Soldier Summit alignment was more fully developed.

**Confidential Western Class I Railroad, Crude-By-Rail Corridor Development.** Mark lead the team that developed engineering, environmental clearance and
permitting, cost estimates, operations plans, and real-estate acquisition for a proposed $2 billion crude oil corridor reaching from the Canadian border to the U.S. Gulf Coast. From the initial telephone call to completion, HDR completed the project in 90 days with more than 100 staff in more than 20 offices.

**Alberta to Alaska (A2A) Railway.** A2A Railway is constructing a 1,500 mile long railway between northern Alberta and Alaska to carry crude oil, containerized goods, mineral concentrates and ores, and construction and industrial materials. Mark’s team is defining the engineering and operating criteria for the railway, writing the operations and maintenance plan, writing the project definitions for the U.S. Surface Transportation Board and U.S. State Department, and updating the financial and business plan and the financial and economic analysis. The railway will load 28 240-car crude oil trains per day.

**New Orleans Gulf Coast Railroad and Port Plaquemines, Coal and Container Port and Railway Development.** Mark was the planning lead for a new 40-mile railway serving a proposed world-class coal export and container port on the Lower Mississippi River, during the STB and FRA environmental clearance process. The EIS Record of Decision has been obtained, on schedule. Mark’s team defined the railway’s operating and engineering characteristics, supported the environmental team in its STB and FRA application and process, and developed the business plan.

**Iowa Department of Transportation, Chicago-Omaha High-Speed Passenger Rail Environmental Impact Statement.** Mark led the engineering, planning, and operations design team for the EIS for the proposed $2 billion passenger-rail line between Chicago and Omaha, which achieved its EIS Record of Decision on schedule. The project is now in final design and environmental permitting for its first phase between Chicago and Iowa City.

**Virginia Department of Rail and Public Transportation, D.C. to Richmond Passenger Rail Environmental Impact Statement and Preliminary Engineering.** Mark led the planning and operations design team for the EIS and PE for the proposed $4 billion passenger and freight railroad improvement project, which achieved approval of its Draft EIS on schedule and the Record of Decision is pending.

**Pebble Mine, New-Build Railway.** This world-class copper mine in Alaska required a 100 to 150 mile long rail line to connect it to tidewater. Mark led the engineering, environmental, and operating design and financial performance team that chose the preferred alignment and developed conceptual engineering, environmental clearance and permitting analysis and plans, and operating and financial performance plans. Two complete designs were developed, one a low-volume, low-cost line to haul only copper concentrate and inbound LNG and supplies, and the other a high-volume line to haul up to 40 copper ore trains per day.

**Canadian National/EJ&E Merger, Environmental Impact Statement, Before the U.S. Surface Transportation Board.** HDR developed the Environmental Impact Statement for the merger of the CN and EJ&E railways, and audited its outcomes from 2008 through 2010. This merger created a rail traffic reroute of up to 40 trains per day from existing CN routes through Chicago’s urban core to the 190-mile long EJ&E route through Chicago’s suburbs. Included in the analysis was development of a complete commuter-rail system overlaid on the EJ&E to satisfy STB concerns that the EJ&E could accommodate METRA commuter expansion. Mark led the rail operations analysis and effects on other railroads, and continued as the rail operations expert during the post-merger auditing of the merger’s effects by the STB.
Donald McCammon
Engineering Lead

Don’s 43 years in railroad engineering provides his clients with unparalleled experience and value. His railroad engineering includes lead engineer on new-build railroads throughout North and South America, Africa, and the Middle East. His expertise includes tunnels, major bridges, locomotive repair shops, and he has extensive experience in railroad construction and maintenance as well as design.

Don applies his construction background from Burlington Northern into his planning and design projects, and utilizes a Value Engineering approach to provide Best Value solutions to clients. As a graduate of the Phil Crosby Quality College, he has extensive training in QA/QC programs. Don has utilized all types of alternative delivery method, including Design/Build and Construction Manager/General Contractor, to help his clients achieve their value, cost, and schedule goals.

Don worked for Burlington Northern for 11 years, including five years maintaining and reconstructing bridges in the Powder River Coal Basin. He has served as Chairman of an AREMA Design Committee and a former Director of the American Railway Bridge and Building Association. He teaches railroad safety and helped develop and continues to teach AREMA’s Railroad Bridge Inspection Class.

Relevant Experience to the Seven County Infrastructure Coalition

Newfield Exploration, Uinta Basin Railway. Don led the engineering task that developed the lowest-practical cost, 170-mile long new railway from Craig, CO, to Roosevelt, UT. The engineering work included a more detailed alignment study including initial drainage structure and bridge sizing, highway and roadway crossings and grade separations, utility impacts, determining right-of-way needs and matched operating and engineering standards to the rail freight volumes likely to be generated by the Uinta Basin rather than the standards used for high-volume, higher-speed Class I rail lines. Don also provided QC of the crude oil and frac sand transload facility to verify the work matched the overall project deliverable standards and the design requirements. Project Cost - $700 Million

Six County infrastructure Coalition, Railway Reassessment. Don led the engineering task reassessing a prior feasibility study conducted for Utah Department of Transportation, which had resulted in excessively high construction cost for the Uinta Basin Railway due to Utah DOT’s request that the line be completely contained within the borders of Utah. This high-level study, using the same engineering standards as the UDOT study but with the freedom to route the line into a lower-cost alignment into Colorado, reduced construction cost from approximately $3 billion for the UDOT alignment, to approximately $1 billion by choosing an alignment to Craig.

Utah Department of Transportation, Uinta Basin Railway. Don led the engineering task and coordination effort between the engineering and environmental teams for this study, the goal of which was to develop and complete an Environmental Impact Statement (EIS) for the proposed railway. HDR developed 26 conceptual routes and construction cost estimates for the railway including origins in Craig, Rifle, and Mack, Colo., near Green River, Wyo., and numerous locations in Utah ranging from Westwater to Wellington, Soldier Summit, and Ogden. Don led the railroad alignment design, alignment alternatives development and selection, roadway realignment and grade separation development, bridge, track, tunnel and terminal layouts to develop the basis of quantities for development of the estimated construction cost. Don coordinated the construction planning and impacts with the environmental team to develop an initial environmental assessment of the project and coordinated the engineering and quantities with an independent peer review process conducted by UDOT. Project Cost $3.1 Billion
Professional Engineer, Montana, United States, No. 7479, Expires 6/30/2020
Professional Engineer - Civil, Nebraska, United States, No. E-9943, Expires 12/31/2018
Professional Engineer, New Mexico, United States, No. 11249, Expires 12/31/2018
Professional Engineer, North Dakota, United States, No. PE-9786, Expires 12/31/2019
Professional Engineer - Civil, Oregon, United States, No. 78236PE, Expires 12/31/2018
Professional Engineer, South Dakota, United States, No. 5295, Expires 12/31/2018
Professional Engineer - Civil, Texas, United States, No. 112542, Expires 9/30/2019
Professional Engineer - Civil, Washington, United States, No. 30049, Expires 4/15/2020
Professional Engineer, Wyoming, United States, No. 5931, Expires 12/31/2019
Professional Engineer, New York, United States, No. 098265, Expires 7/31/2020

PROFESSIONAL MEMBERSHIPS
AREMA - 1982 to present
ASLRRRA - 2007 to present
ACEC – MT Board Past-President 2017-2018

INDUSTRY TENURE
43 years

HDR TENURE
21 years

OFFICE LOCATION
Missoula, MT

Confidential Class I Railroad, Crude-By-Rail Corridor Development. Don lead the engineering work for this 2,000-mile long corridor, coordinating the design with environmental clearance and permitting, cost estimates, operations plans, and real-estate acquisition for a proposed $2 billion crude oil corridor reaching from the Canadian border to the U.S. Gulf Coast. From the initial telephone call to completion, HDR completed the project in 90 days with more than 100 staff in more than 20 offices. Project Cost - $2.6 billion

Alberta to Alaska (A2A) Railway, A2A Railway is constructing a 1,500-mile long railway between northern Alberta and Alaska to carry crude oil, containerized goods, mineral concentrates and ores, and construction and industrial materials. Don’s team led the conceptual engineering phase and developed the initial construction and procurement plan. The railway will load 28 240-car crude oil trains per day. Project Cost $12.9 Billion

US Army Corps of Engineers, Hill AFB UTTR Missile Transfer Facility, Ogden and Lakeside, UT. Don provided a Customer Concept Document and is providing final design engineering for a 14-mile rail spur connecting the UTTR facility at Oasis, UT with the UP at Lakeside, Utah, and missile transfer and storage facilities. This includes developing design standards that combined UP and USACE/Dept. of Defense railroad standards, revising an alignment developed during the environmental phase and improving the connection with the UP and updating the project cost estimate including value engineering to reduce track length. Project Rail Cost $44 Million

Long Island Railroad Best Value and Constructability Analysis, Final Design
Don conducted a Best Value and Constructability Analysis for the replacement of the Buckram Road Grade Separation Bridge, and repairs to Post Avenue, Springfield Boulevard and Union Turnpike underpass structures. The review included bridge and associated track work, constructability, work schedule, and impacts to LIRR train operations. The combination of Best Value suggestions and constructability review identified significant savings to LIRR and the process used was adopted by LIRR for future project use. Don later provided QC reviews of the construction documents.

DM&E/CP Railway Powder River Basin Project. Don led the engineering effort for the design of 600 miles of existing railroad rehabilitation and 280-miles of greenfield railroad connecting the Powder River Basin mines with the upper mid-West rail network. This included leading the design and construction of emergency repairs for a 31-mile segment of the railroad washed out during a major 800-year event rain storm. Don led the track, bridge, building design, cost estimating efforts, safety plan and training for field crews, coordinating with the environmental process, providing information and attending public meetings on 4(f) and USACE 401 and 404 permits, and worked closely on alternative delivery and standard design-build-build delivery packages for portions of the work. The project included over 3,000 drainage structures including 312 major bridges in addition to the track 5 major yards, major fueling and rolling stock repair facilities. Project Cost - $3.6 Billion

City of Idaho Falls, "D" Street Underpass Replacement, Idaho Falls, ID
HDR designed and provided construction assistance for a replacement structure that will allow for three lanes of traffic and a pedestrian path on one side of D Street. The D Street Underpass is a heavily used grade-separated crossing of the Union Pacific Railroad in the vicinity of downtown Idaho Falls. The HDR Team is coordinating extensively with UP to minimize impacts to the active rail line, including the design of a temporary shoo-fly track and assisting the City with the Construction-Maintenance Agreement with UP.
Kevin Keller
Environmental Lead/Federal Grants and RRIF Loans

Kevin leads HDR’s freight rail STB and FRA NEPA practice with 14 successfully completed Records of Decisions (RODs) on Environmental Impact Statement (EIS) documents for freight rail projects in the last 10 years. Kevin has 34 years of management, planning, environmental and engineering experience in freight rail, including 11 years with HDR. Kevin has managed the planning, permitting, engineering design, and evaluations of new rail alignments, transportation corridors, new maintenance facilities, new structures, logistics planning, and fleet management. He has also managed public benefits analyses, economic development studies, industrial development studies, feasibility studies, and environmental assessments for numerous federal, state, and private transportation clients, including development and preparation of more than 50 State Rail and Freight Plans and more than 20 successful federal grant applications.

EDUCATION
Master of Science, Hydrology/Environmental Management, University of South Florida, 1986
Bachelor of Science, Geology/Civil Engineering, University of South Florida, 1982

REGISTRATIONS
Certified Professional Geologist, Indiana, United States, No. 1030
Certified Groundwater Professional, Iowa, United States, No. 1009
Registered Professional Geologist, Kansas, United States, No. 471
Registered Professional Geologist, Kentucky, United States, No. 1590
Registered Professional Geologist, Tennessee, United States, No. TN1334
Registered Professional Geologist, Wyoming, United States, No. PG-2222

RELEVANT EXPERIENCE
NOGC Railroad Relocation Study, FRA and New Orleans Regional Planning Commission. Project Manager for a FRA-lead NEPA environmental document for the relocation of 12-miles of the New Orleans & Gulf Coast Railroad (a short line railroad operating on the west bank side of New Orleans). The project involved management of a multi-disciplined team working in a very sensitive environmental justice area. The project also involved coordination with multiple stakeholder agencies and groups, including LADOTD, FRA, STB, FHWA, Jefferson Parish, Plaquemines Parish, New Orleans Regional Planning Commission, the City of Gretna, The City of Weswego, USACE, and the Belle Chaisse NAS/JRB.

Newfield Exploration, Uinta Basin Railway. Environmental Lead for the team that developed the permitting and STB EIS analysis for this feasibility study for a 170-mile long new railway from Craig, CO, to Roosevelt, UT. The environmental analyses described the authorizations and permits required to construct a railway in the U.S., and the environmental clearances and permits that appear specific to the location of the railway in Colorado and Utah. HDR conducted a preliminary desktop review to provide an evaluation of potential environmental constraints and permits that may be necessary to implement the proposed project. The proposed project entailed two independent actions: a railway between Craig, CO, and Roosevelt, UT, and a rail transload facility located either at Craig or Roosevelt.

Port Bienville Railroad Environmental Study, FRA and Mississippi Department of Transportation. Project Manager for a project-level EIS for 24-miles of new railroad line to connect the Port Bienville Short Line Railroad with the Norfolk Southern mainline in Nicholson, MS. Dual Class I rail access is proposed to enable Hancock and Pearl River counties and Stennis Space Center to attract new industries to this region that require this level of rail service, and encourage job creation and investment opportunities to help this area recover from natural disasters that have significantly affected local economies. Project tasks have included market
PROFESSIONAL MEMBERSHIPS
American Railway Development Association, Past President, 1998-Present

American Railway Engineering and Maintenance of Way Association (AREMA), AREMA Foundation Board of Directors, 1998-Present

Inland Rivers Ports and Terminals Association (IRPT) Board of Directors, 2018

American Society of Civil Engineers (ASCE), Member, 2001-Present

US/Panama Business Council, Binational Board of Directors

US/ Mexico Chamber of Commerce (USMCOC), Co-Chair, Transporte Internacionale Committee, 2004-Present

Transportation Research Board (TRB) Committee AR040 – Freight Rail, Secretary, 2006-Present

AASHTO Standing Committee on Rail Transportation, Member, 2005-Present

analysis/feasibility study, alternatives analysis, scoping, public outreach, cultural resource assessments, wetlands delineation, and other activities related to the preparation of the EIS. Cooperating agencies included STB, USECE, USEPA, and NASA.

CSX Transportation, Inc.—Easement Acquisition—Louisville Indiana Railroad Company (LIRC), U.S. Surface Transportation Board Project Manager for a NEPA document for CSX Transportation Inc. (CSXT) proposing to acquire an easement over and jointly use the Louisville & Indiana Railroad Company’s (LIRC) 106.5-mile line from its connection with CSXT in Indianapolis, IN, to its connection with CSXT in Louisville, KY (the Line). In order to jointly use the Line with LIRC, CSXT sought STB authority to acquire and jointly use a perpetual, non-exclusive railroad operating easement. The project included a review of the potential environmental and historic impacts of the Proposed Transaction, working with the STB’s Office of Environmental Analysis to prepare an Environmental Assessment (EA) assessing the potential environmental impacts of the Proposed Transaction and proposing environmental mitigation to minimize potential impacts.

Tupelo Rail Relocation Planning and Environmental Study - Mississippi Department of Transportation/FRA. Project Manager for a study to advance the relocation planning, identify a preferred rail alignment, and to obtain an approved environmental document for alternatives to alleviate roadway congestion caused by the existing rail lines through the City of Tupelo and to gauge the actual cost of congestion in the future. HDR prepared all NEPA documentation including: project management; public outreach; rail and roadway alternatives analyses; impacts assessment; and development of mitigation plans.

Port of Savannah International Multi-Modal Connector, Georgia Ports Authority. Project Manager for the development of a successful FASTLANE Grant application The Georgia Ports Authority will be awarded $44,000,000 of a $126,700,000 project to reconfigure the Port of Savannah’s on-dock intermodal container transfer facilities to bring rail switching activities inside the Port. The project included: 1) building two arrival/departure tracks and extending the track east from Chatham Yard to new arrival/departure tracks; 2) rebuilding a bridge over new yard tracks, Pipemakers Canal; 3) extending Chatham Yard arrival/departure tracks into Mason Yard as working tracks as well as two additional arrival/departure tracks; 4) building two new work tracks at Mason Yard, adding high-capacity cranes, and building new storage tracks; and 5) relocating the Norfolk Southern Foundation Lead track parallel to arrival/departure tracks between Mason Yard and Chatham Yard.

Atlantic Gateway, Virginia Department of Transportation. Project Manager for a successful $165,000,000 FASTLANE grant application to support the Atlantic Gateway project, a corridor approach to improving mobility across the Eastern seaboard. The total Atlantic Gateway project is $905,000,000. The FASTLANE award will be combined with other public and private funding from multiple partners to invest in rail and highway capacity, including constructing approximately six miles of a fourth mainline from the South bank of the Potomac River to Alexandria, extending the express lanes on I-395 north to the Pentagon and on I-95 south to Fredericksburg, and improving general purpose lanes on segments of I-395 to add capacity and improve safety. Other elements include constructing a third main rail line between Franconia and Occoquan, expanding I-95 southbound capacity across the Rappahannock River, rest area reconstruction, and truck parking.
Jonathan W. Johansen
Roadway Engineer

EDUCATION:
BS, Civil Engineering, Utah State University, Logan, Utah, 2003

LICENSES:
Professional Engineer, 5148749-2202, 2007

SUMMARY:
Mr. Johansen has 15 years of experience managing projects in both the private and public sectors. These projects include right of way acquisition, road design, residential, commercial and industrial site development, state park improvements, wastewater collections systems, potable water systems, irrigation systems, and drainage systems. He has had engineering and management responsibility for master plans, engineering reports, initial site development, design, layout, construction plan sets, contract documentation, and specifications. Mr. Johansen has provided design services for water and wastewater projects ranging from subdivision distribution and collection systems to culinary water systems for the State Parks. His involvement has included coordination and design of the relocation of irrigation lines, culinary lines, and sewer collection lines. Mr. Johansen has provided design services for drainage projects that included large and small collection systems. His involvement has included drainage modeling and design, contract document preparation, and permitting.

EXPERIENCE:
Johansen & Tuttle Engineering:
• 2018, Hill Top Road, Carbon County, Utah
• 2018, Westwood EWP – NRCS Erosion Control Project, Carbon County, Utah
• 2018, Carbon County 7th District Courthouse, Price, Utah
• 2017, Wingate Campground – Dead Horse Point State Park, Utah
• 2017, Green River City Emergency Sewer Project, Utah
• 2016, Green River City Street & Utility Improvements, Utah
• 2016, Shady Acres Campground Drainage Project, Green River, Utah
• 2016, Green River City West Industrial Park Master Plan, Utah
• 2015, Project Engineer, USU-Eastern Secondary Water Feasibility Study
• 2014, Project Engineer, Emery County Debris Basins, Utah
• 2014, CCCIC Irrigation Master Plan, Design, and Construction Projects, Castle Dale, Utah
• 2013, Wellington City Sewer Plan Culinary Water Analysis
• 2013, Emery County Huntington Creek EWP-NRCS Erosion Control Project, Huntington, Utah
• 2011, Moore Cutoff Road, Moore, Utah
PRESIDENT OF JULIANO CONSULTING (2015 – Current)
Specializing in positioning key governmental and community relations for benefit of project development and funding procurement support.
- Legislative and Policy development, including lobbying and public process
  - Collaboratively drafting services, successfully lobbied on both sides of the isle.
  - Public-private partnership development for project development.
  - Government relations associated with energy Tariff negotiations
- Establish and maintain key governmental relationships
  - State, regional, and federal offices of USDOT, USDA, BIA, EPA, BLM, and EDA.
- Funding procurement including appropriations, federal grants, and public – private agreements for project development.

CONGRESSIONAL GOVERNMENT RELATIONS STAFFER (2005-2015)
Developed key federal, community, tribal and state government relationships for the benefit of successful legislative and project outcomes.
- Navajo Uranium Water Contamination EPA clean up
  - Established relationships with Utah Navajo Chapter leadership, BIA, EPA, and DOE to benefit communications during the clean-up.
- Navajo Nation - Trust Land Agreement
  - Responsible for US House communications and collaborative language with Utah Navajo Nation Chapters, BIA, President Joe Shirley Jr’s Office, Lt. Governor Greg Bell, and State and Federal Legislators.
  - Managed communications with Utah Navajo Chapters, BIA, and other for congressional hearing process
- Navajo Mountain Water Distribution
  - Established working relationships to address lack of culinary water access following a 2007 fire at Navajo Mountain that left community members without culinary water accesses. BIA, Navajo Nation President Joe Shirley Jr., and Lt. Governors of Utah and Arizona collectively resolved the issues.
- DOE UMTRA Clean Up (2006-2012)
  - Established stakeholder relations in association with multi-year $1billion dollar tailings cleanup adjacent to Arches and Canyonlands National Parks including federal agencies Army Corps, NPS, BIA, DOE, US Fish and Wildlife as well as the Water Districts from CA, NV, and AZ.
- Utah Recreational Land Exchange – from 2007 – 2011
  - Established Ute Business Council relations with then Chairman Curtis Cesspooch and later Irene Cuch, Utah State Institution Trust Lands (SITLA), BIA, and federal legislators to collaboratively develop legislative language which later was signed into Law in 2014.
  - Established collaborative effort with Navajo Chapter Presidents, BIA, BLM, and Department of Education to secure project funding.
- Emergency Funding for Water Systems in Uintah County
  - Established communication with Ute Tribal Business Council, County governments, USDA and NRCS State Directors and federal legislators to ensure funding procurement would be assigned to the project.

In addition to the above, Pamela Juliano has nearly two decades of experience in government and public relations. After serving for nearly a decade as a Congressional advisor she launched her private consulting practice Juliano Consulting, which successfully supported favorable outcomes in government relations, funding procurement, and legislative services.

In 2016 she co-located office space for her consulting services in Salt Lake City, Utah and in Helper, Utah, her home of 35 years with her husband Joe Juliano and maintains regular DC travel schedule to maintain high level federal agency and legislative relationships.

Pam has been recognized by Chambers of Commerce, community councils and government agencies for her involvement in projects associated with AmeriCorps and has served on a number of planning and outreach councils including Millcreek Planning Commission, AmeriCorps VISTA Service Learning Council, Economic Development Councils, and USU Women’s Business Leadership.
Aaron Averett, P.E.

Mr. Averett is experienced in the planning, design and construction management of a wide variety of projects throughout Utah and Nevada including culinary and irrigation water projects, transportation, site planning and parks and recreation projects. Many of the projects Mr. Averett has participated in include planning, funding coordination and acquisition, environmental clearance, technical design and coordination with regulatory agencies, construction management and GIS. Working closely with clients allows Mr. Averett to adapt services provided to match the need of each project individually. Communication has been a vital part of each project Mr. Averett has been involved with.

South Hills Utility Corridor and EA
Santa Clara, Utah
Mr. Averett coordinated with the BLM (Bureau of Land Management) to fulfill NEPA (National Environmental Policy Act) requirements for Santa Clara City in obtaining 2 mile power easements through an area spotted with critical habitats and threatened species.

Culinary Supply Line, Tank and Distribution System
Kane County, Utah
Under the direction of the Kane County Water Conservancy District Mr. Averett worked with the Dixie National Forest to obtain the environmental clearance and permits necessary to install a supply line and tank on Forest Service lands to provide culinary water to a subdivision with a defunct water system. Mr. Averett also worked closely with funding agencies to obtain funds and meet funding requirements for the overall project which included over 20 miles of culinary supply and distribution waterlines and a new culinary water tank. Mr. Averett also oversaw the construction management of the water improvements project and the roads improvements associated with the project. Coordination with local utilities, county agencies, state and federal agencies created challenges that were worked through as part of this project.

Long Valley Estates Water System Design
Kane County, Utah
Mr. Averett coordinated the meeting of funding requirements including environmental, archaeological and design criteria requirements. He also oversaw the design of 35,000 feet of culinary water pipe and a 350,000 gallon water tank to serve 220 connections in a subdivision with a previously inadequate system. Mr. Averett also coordinated with surrounding property owners and collected right-of-way documents.

Additional Experience:

- Duchesne County Water Conservancy District Conservation Update - Duchesne, Utah
- Uintah County Ashley Valley Nature Park - Uintah County, Utah Daggatt County Trails Master Plan - Daggatt County, Utah
- Uintah County Trails Master Plan - Uintah County, Utah
- Ashley Valley Flood Control Projects - Ashley Valley, Utah
- Tabby Valley Park GIS Collection and Site Planning - Tabiona, Utah
- Tabby Valley Park Funding Application - Tabiona, Utah
- Water Master Plan Update and Consulting Services - Santa Clara City, Utah
Mark Holder
Right-of-Way Lead

Mark is HDR’s Freight Rail Real Estate Lead with over 38 years of experience in rail real estate projects including sales and marketing, acquisitions, joint ventures, eminent domain, private road crossing management, valuation, and public and private partnerships. His work history includes 30 years of real estate experience at CSX Transportation. His experience includes environmental mitigation of real property assets, Geographic Information Systems (GIS), timber and land management and sales to public agencies. He has extensive knowledge of leading a team and motivating a diverse, engaged and sustainable workforce. Mark has participated in and led negotiations for multiple public agency and private real estate projects.

PROJECT EXPERIENCE

- Negotiated the sale of a former rail yard converted to an industrial park in Washington, DC. Proposed new use for high-rise residential and retail. Challenges included zoning change, neighborhood acceptance, governmental compliance and the tremendous downturn in residential condominium and apartment market nationwide. Scope of project $40M. Awarded CSX Chairman’s Award of Excellence in recognition of closing this sale despite deteriorating real estate and capital market conditions.

- Positioned a former rail yard parcel in Washington DC for transition and sale for high rise residential and mixed uses development. This high demand parcel had significant hurdles to development including environmental, access, security issues (proximity to US Capitol), adjoining uses, and existing encroachments. Negotiated a contract for the purchase of this asset. Scope: $100M.

- Negotiated the sale of former Union Station site in downtown Chicago. Intended use is for a high rise residential and mixed uses development promoting the asset’s riverfront location. Owner was a Class 1 railroad and was actively marketing this site on an “as-is” basis for the past 20 years. Worked with city land planners, land-use attorneys and several potential buyers, to close this sale for $32.5M.

- Managed the strategic direction and disposition of a Class I railroad’s interest in Western Pocahontas Properties LP, a real estate, timber and mineral company. Created value through innovative analysis and positioning of the assets to effect a sale for $46.4M. Originally valued independently at $12M.

Portfolio Management/Valuation

- Acquisition - Lordstown, OH. Negotiated option to purchase a 200 acre industrial complex. Negotiations included natural gas and oil rights.

- Acquisition - Leominster, MA. Located and negotiated option to purchase a 75 acre industrial property.

- Acquisition - Palm Beach, FL. Negotiated third party option contract to purchase 100 acre industrial parcel adjacent to an existing rail facility.

- Specialist in the valuation of corridors and rights-of -way, including alternative uses for in-place systems such as fiber-optic, gas and power transmission.

- Washington, DC. Prepared valuation analysis of corridor from Fredericksburg, VA to Washington, DC for expansion of the Virginia Rail Express Line. Scope of project: $500M.

- Orlando, FL. Valued the real estate for the proposed elevated rail system through downtown Orlando. Scope of project: $55M.

EDUCATION
Bachelor of Science, Real Estate and Risk Management, Florida State University

CERTIFICATIONS
MAI member of the Appraisal Institute Chicago, IL Issued 1993 (inactive)

Real Estate Broker, State of Florida BK384202

Affiliations
2018/2019 President and Executive Committee Chairman, American Railway Development Association, Washington DC
Bill Hjelholt
Project Advisor

Bill is HDR’s Director of Freight Rail. He leads a team of over 200 freight railway specialists performing a full range of services and disciplines for railway clientele. The service lines under his leadership include planning, track and civil design, bridges and structures, yards and terminals, and construction supervision.

Bill’s 32 years of progressive experience include the management of major infrastructure projects and programs across North America and around the world. Bill is experienced with a wide variety of project delivery modes, working for clients such as Class I Railways, passenger and commuter rail agencies, governments, and the resource-industrial sector.

RELEVANT EXPERIENCE

Alberta to Alaska Railway
Bill is the Project Director for the planning, engineering, STB and CEAA environmental clearance for the design, permitting, and construction of a new 1,500-mile railway that will connect Northern Alberta’s oil sands producers to tidewater in Alaska. This $18 Billion project is currently in early STB and Canadian Environmental Assessment Agency (CEAA) review.
Role: Project Director

Saskatoon Railway Bypass, Saskatchewan, Canada
Bill is Project Principal for a study to evaluate a program of multiple grade separations including a downtown rail trench underpass in Saskatoon; and the alternative of relocating the CP Railway to bypass the city.
Role: Project Principal

With Other Companies
Rio Tinto, Simandou Railway, Guinea, West Africa
Bill was Project Director of the Simandou Rail project from May 2011 to January 2012, where he oversaw the mobilization of more than 400 staff to deliver preliminary engineering for a 600-km heavy-haul railway in Guinea. The scope included track, civil, structures, tunnels, communications, train control, rolling stock and maintenance facilities. The $4.5B capex was delivered using dispersed engineering, with offices across North America, Australia, and Spain. Extensive cost estimating and value engineering were carried out. 14 design-build and/or supply contract packages were completed.
Role: Project Director

Canadian National Railway (CN), Cote-Nord Mining Railway, Canada
Bill was the Project Director to assist CN in determining financial feasibility. He led route selection and conceptual design and delivered preliminary engineering for a ±500-km heavy-haul iron ore railway in Quebec and Labrador. The scope included cost estimating, procurement strategy, permitting strategy; planning and simulation of operations to confirm capacity; track, civil structures, tunnels, and facilities. $3.5B capex.
Role: Project Director

CN (For VIA), Toronto to Montreal Expansion, Ontario, Quebec
41-miles of new triple-tracking built on CN’s Kingston Subdivision, (70-miles planned) in seven segments from Oshawa to Turcot (Montreal). $330M capital budget, responsible for costing and scheduling of entire program, and design of track, civil, and structure components. Collaborated to support Environmental

EDUCATION
Bachelor of Science, Environmental Studies - Architecture, University of Waterloo
Construction Management, Conestoga College

PROFESSIONAL MEMBERSHIPS
American Railway Engineering & Maintenance of Way Association
American Association of Railroads
Toronto Railway Club
Canadian Railway Club
American Shortline and Regional Railroad Association

INDUSTRY TENURE
32 Years
Assessments for each segment. Major structures include 12 rail-carrying structures and three overpasses; along with nearly 50 culvert extensions. More than 40 level crossings requiring upgrades; and extensive real estate acquisition.

Aggressive schedule was advanced the great success; aerial and ground surveys and geotechnical investigations commenced in the spring of 2010, and detailed design of track, civil, and structural was completed in 2010.

**Role:** Project Director

**Union Pacific, Colton Crossing, California**
Bill was Project Director for the construction phase of the Colton Crossing Grade Separation. This innovative flyover eliminated four diamonds on the BNSF and UP mainlines. Lightweight concrete, ground improvement, composite straddle bents were utilized to expedite schedule, and reduce costs. This project was completed early and about $100M below budget.

**Role:** Project Director

**Project Principal – BNSF Projects, partial listing**

- **Wilmar Wye, Minnesota**
- **Bridge and Double Track, Glasgow and Milk River, Montana**
- **KC Automotive Facility Expansion**
- **Capacity Projects:**
  - Lakeside Subdivision 2, Montana to Babb, Washington
  - Multiple Sidings, Texas
  - Devil’s Lake and Mandan, North Dakota
  - Galesburg, Illinois

**Project Manager, Freight Rail Facilities**

**CN, Jet Fuel Transload Facility**
New, two-track facility for unloading fuel from railcars to truck trailers. Capacity of 4,000,000-gallons per week.
Terry Warner, PE, CPESC, ENV SP
Environmental Deputy Lead

Terry has 19 years of engineering experience in a wide variety of technical disciplines, project types, and delivery methods. He has extensive experience in environmental analysis (NEPA) and permitting, civil engineering design, contractor procurement, and construction management involving large multidisciplinary teams. He has an ability to develop strong public, private, and regulatory agency relationships, has effective project management skills, and is accustomed to working in a collaborative environment.

RELEVANT EXPERIENCE

Six County Association of Governments, Central Utah Rail Project, Juab and Sevier Counties, UT, Project Manager
HDR contracted with SCAOG as a third-party contractor, acting under the direction of the Surface Transportation Board to prepare an Environmental Impact Statement (EIS). This analysis was to comply with the Board’s environmental rules and other state and federal environmental regulations (49 CFR 1105). The proposed project consisted of constructing and operating a new rail line between the UPRR mainline near Juab and Salina, which would provide a more direct connection to rail service for shippers, primarily the coal industry, in the Sevier Valley and central Utah.

UDOT, Little Cottonwood Canyon EIS, Salt Lake, UT
HDR is preparing an EIS of Little Cottonwood Canyon for UDOT. This EIS will evaluate various options to solve recreation based congestion including transit, avalanche mitigation, parking, adding roadway capacity, gondolas, and rail. HDR will also conduct field surveys for biological resources and wetlands and conduct evaluation of 4(f) resources. The project will require extensive coordination with the U.S. Forest Service including the potential acquisition of federal lands for transportation purposes. Other cooperating agencies include the Utah Transit Authority, U.S. Army Corps of Engineers, and U.S. EPA. Little Cottonwood Canyon is also a water source protection area requiring evaluation of innovative approaches to minimize water quality impacts.

Union Pacific Railroad, Great Salt Lake Causeway Permitting and Bridge Construction, Box Elder, UT, Quality Control
HDR assisted UPRR with its Clean Water Act Section 404 permitting. The services were related to replacement of two unstable culverts that cross the Great Salt Lake. HDR developed a water and salt balance model to define a bridge to meet ecological, mineral industry, and lake management objectives. The project required extensive resource impact reports and an environmental assessment.

UDOT, I-15 CORE (Corridor Expansion), Utah County, UT, Environmental Manager/Design Oversight
HDR was the lead designer on the design-build team for this $1.7 billion project that extended over a 23.5-mile stretch of the major north-south commuter route between Salt Lake City and the Provo/Orem region. Terry led a Clean Water Act Section 404 permit modification for wetlands and associated Section 401 water quality certification, stream alteration permits, dust control, and NPDES. The project had extensive agency coordination efforts and an extremely aggressive schedule. All permits were received for NTP 2 and in time for contractor to meet its overall schedule. He also helped prepare the design-build proposal and provided design reviews for over 2,000 separate submittals focusing on drainage infrastructure plans and reviews for overall environmental compliance.
Jody J. Patterson, Ph.D.

I have over 25 years of archaeological experience. I am the senior principal investigator and co-owner of MOAC. My responsibilities include organizing, implementing, and overseeing all MOAC projects. Specific duties include project administration, proposal and cost estimate preparation, fieldwork (survey and testing), analysis, report preparation, and QA/QC. I have considerable NEPA and Section 106 experience. I have experience in the Great Basin, Colorado Plateau, the Southern High Plains, the American Southwest, the Western Arctic and Subarctic, and Egypt. My research interests include historical ecology, aerial and spatial archaeology, cultural resource management, and public archaeology.

Professional Accomplishments

Vernal Field Office Class I and Site Location Models
- Principal Investigator
- Site location model development of the entire Vernal Field Office area
- Review and synthesis of over 14,000 site records in the Vernal Field Office area

Nine Mile Canyon Youth Public Archaeology Project
- Manage excavation and logistics for the youth excavation of a prominent Fremont site in Nine Mile Canyon
- Collaborate with a team from the BLM, ASU, USU, and CPAA to introduce archaeology and STEM to high school students

West Tavaputs Plateau Programmatic Agreement
- Assist the proponent in the Programmatic Agreement (PA) process and working with Consulting Parties
- Ensure that the proponent fulfills their ongoing cultural resources requirements under the PA
- Work as a collaborative team member with BLM and consulting parties on issues pertaining to the PA

Employment History

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<thead>
<tr>
<th>Year</th>
<th>Position</th>
<th>Organization</th>
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<tr>
<td>2007-2018</td>
<td>Principal Investigator</td>
<td>Montgomery Archaeological Consultants, Inc., Moab, UT</td>
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<tr>
<td>1999-2001</td>
<td>Adjunct Faculty</td>
<td>University of Alaska, Fairbanks, Fairbanks, AK</td>
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<tr>
<td>1997-1999</td>
<td>Research/Teaching Assistant</td>
<td>University of Alaska, Fairbanks, Fairbanks, AK</td>
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<td>1996</td>
<td>Project Archaeologist</td>
<td>NPS-Wrangell-St. Elias, Copper Center, AK</td>
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<td>1994-1995</td>
<td>Archaeologist</td>
<td>NPS-Pecos National Historical Park, Pecos, NM</td>
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Education

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<tr>
<td>2010</td>
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<td>University of Alaska, Fairbanks, Fairbanks, AK</td>
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<tr>
<td>1996</td>
<td>MA.; SW Studies/Anthropology</td>
<td>New Mexico Highlands University, Las Vegas, NM</td>
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<tr>
<td>1994</td>
<td>BA; Anthropology/Sociology</td>
<td>New Mexico Highlands University, Las Vegas, NM</td>
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Community Service & Awards

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<tr>
<td>2014-Present</td>
<td>Grand County Historic Preservation Commission</td>
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<td>2016-Present</td>
<td>Grand County Airport Board</td>
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<tr>
<td>2015</td>
<td>BLM-Utah Distinguished Archaeological Contractor Award</td>
</tr>
<tr>
<td>2018-2020</td>
<td>President, Utah Professional Archaeological Council</td>
</tr>
</tbody>
</table>
EDUCATION
Bachelor of Science, Civil Engineering, University of Utah, 1982

REGISTRATIONS
Professional Engineer, Utah, United States, No. 173445-2202

RELEVANT EXPERIENCE

UDOT, Uinta Basin Transportation Study, Uinta Basin, UT
This study examined and documented existing and future conditions for the feasibility of advancing projects to construction, incorporating a 2040 planning horizon. The project team developed a vision for the Uinta Basin Transportation System and a phasing of construction projects to support that vision. A main focus was an analysis of the feasibility of a roadway connection between I-70 in Grand County and Seep Ridge Road in Uintah County.
Role: Project Manager

Jones & DeMille, Uinta Basin Infrastructure Evaluation and Prioritization, Uinta Basin, UT
HDR supported the Seven County Infrastructure Coalition with broad support for program management and infrastructure investment analysis. Main responsibilities included engineering, project recommendations and screening criteria, economic analysis, GIS and data management support.
Role: Project Manager

UDOT, US-191 Culvert Repair, Uinta County, UT
HDR has provided complete preliminary engineering design for culvert rehabilitation and stream bank protection along Big Brush Creek culvert crossing on US-191 at milepost 363.5. The scope includes complete structural design for wingwall, apron, and cutoff walls on both ends of the existing culvert, and developing appropriate stream bank protection upstream of the culvert to prevent future embankment erosion, along with an erosion control plan for restoration of embankment slopes.
Role: Principal-in-Charge

Uinta County, White River Bridge Load Test, Uinta County, UT
HDR performed a physical load test on the Seep Ridge Road Bridge over the White River and revised the load posting by incorporating strain data from the field into the load rating analysis in BrR.
Role: Principal-in-Charge

Dave Nazare, PE
Principal-In-Charge

Dave joined HDR after a distinguished 28-year career with the Utah Department of Transportation (UDOT). He has a broad range of experience beginning on a UDOT construction crew, moving to Bridge Designer, Chief Hydraulic Engineer, I-15 Design Oversight Manager, State Bridge Engineer, and Region Three Director, to currently leading HDR's Utah Transportation Group. Dave has built relationships with many municipal governments and transportation stakeholder groups throughout Utah. At HDR, he uses his broad-based experience to assist with evaluating options and risks to provide cost effective solutions for large and small transportation projects.
Asia Alvord  
Project Controls

Asia has 13 years of project controls experience, including over 17 years with HDR. She has extensive knowledge of various project controls applications and experienced with graphic and interface design using various computer programming languages. Her project and technical management experience include: schedule baseline and updates review and analysis; development and evaluation of linear schedules using linear schedule methodology; cost management; implementation and management of electronic data management systems; contract compliance; claims avoidance and analysis; business process review and analysis; and IS project management. She has experience developing procurement documents and reviewing proposals for design-build projects as well as a broad knowledge of the public-private partnership market.

**RELEVANT EXPERIENCE**

**UDOT, Uinta Basin Rail Feasibility Study**, *Uinta Basin, UT*  
HDR assisted UDOT and local officials in a collaborative effort to determine the economic viability of a freight line in the Uintah Basin and to analyze the potential environmental consequences from construction and operation of the rail line.  
**Role:** Project Controls

**UDOT, Uinta Basin Transportation Study**, *Uinta Basin, UT*  
This study examined and documented existing and future conditions for the feasibility of advancing projects to construction, incorporating a 2040 planning horizon. The project team developed a vision for the Uinta Basin Transportation System and a phasing of construction projects to support that vision. A main focus was an analysis of the feasibility of a roadway connection between I-70 in Grand County and Seep Ridge Road in Uintah County.  
**Role:** Project Controls

**HNTB, Trans Texas Corridor – 35, Tier One**, *Texas*  
The purpose of Tier One EIS was to determine the recommended reasonable corridor alternative from which the TTC-35 route will be located. The study area includes over 70 counties in Texas and extends from the Red River to the Rio Grande. This project required extensive public involvement including scoping meetings informal public meetings and formal public hearings held statewide.  
**Role:** Project Controls

**Dakota Minnesota & Eastern Railroad, Powder River Basin Coal Expansion**, *South Dakota*  
HDR was responsible for preliminary engineering and route selection for approximately 260 miles of new heavy-haul rail line into the Powder River Basin (PRB) coal fields. The project also included the rebuild of approximately 600 miles of the existing DM&E mainline to meet heavy-haul standards.  
**Role:** Project Controls

**UDOT, Access Utah County Program Management**, *Utah County, UT*  
AUC is actually five distinct design-build projects designed to improve traffic mobility in this area. HDR is providing program management, project controls, design and construction oversight, and audit oversight services for all five design-build projects at a total construction value of $600 million.  
**Role:** Project Controls
Kyle Robe, PE  
Deputy Engineering Lead

EDUCATION
Bachelor of Science, Civil Engineering, Brigham Young University, 2008  
Brigham Young University - Hawaii - Intercultural Communications  
University of Wyoming - Surveying

REGISTRATIONS
Surveyor in Training, Utah, Issued 04/15/2010  
Professional Engineer (Civil), Nebraska, #E-15621, Issued 06/01/2015, Exp. 12/31/2018  
South Carolina, #34194, Issued 02/27/2017, Exp. 06/30/2019  
Ontario, #100189461, Issued 06/14/2013, Exp. 06/30/2018

Affiliations
AREMA – Committee 5

Over ten years of civil engineering experience in project and construction management, rail track alignment design and modeling, water modeling, land development, highway and municipal street design, documentation, utility design, and civil design. Additional experience includes client management and serving as a survey crew chief on projects that varied from construction to land surveys under the supervision of a professional land surveyor.

RELEVANT EXPERIENCE

Industrial Client  
Edmonton, Alberta  
Acting as the construction manager for a large oil and gas client, supervising the construction of 6 loop tracks for an expanding facility.

BNSF Railway, Pleasant Dale to Milford Double Main Project  
Milford, Nebraska  
Provided full construction oversight, inspections, schedule management, change order tracking, providing answers to RFI and submittals, safety, field design changes and full environmental SWPPP compliance services.

Rio Tinto, Simandou  
Simandou, Guinea, Faranah Region  
Responsibilities included coordination of the rail design criteria needed for each aspect of the project as it pushes the limits of capacity. Segment engineer responsible for project management, design reviews, quality control, for a segment of the 670-kilometer project.

Canadian National Railway, Cote Nord  
Montreal, Quebec  
Worked on coordinating the development for a design criteria for a new heavy haul rail line in northern Canada.

Utah Transit Authority, Frontrunner South  
Salt Lake City, Utah  
Responsible for updating and adding horizontal and vertical alignments, exhibits, redesigns, cross sections, InRoads modeling, and right-of-way coordination.

Utah Department of Transportation, Browns Park Road  
Daggett County, Utah  
Responsible for project documentation and inspection over the life of the project. Other duties included static GPS surveying set-up and topographic survey.

City of Lehi and City of Sandy Public Works, Municipal Works  
Lehi and Sandy, Utah  
Responsible for CADD design work, inspecting, surveying, and various other related municipal engineering tasks.
EDUCATION
Bachelor of Science, Natural Resources, University of Delaware, 2004

Frank Pisani
GIS Manager

Frank has extensive GIS experience using spatial analysis and mapping tools in both the private and public sectors. His specialties lie in enterprise data management, spatial data visualization, and web-based mapping. He supports engineering design, right-of-way, public involvement, and project management staff with mapping data analysis and asset management. Frank is skilled in creating focused web content to support project teams, stakeholder experiences, and public-facing web items. He is an advocate of GIS technology and strives to show clients and colleagues how taking a GIS approach to solving problems make projects more successful. Frank is part of HDR’s Geospatial Technology Leadership Team, which focuses on using advanced technology solutions to solve complex project challenges.

RELEVANT EXPERIENCE

UDOT, Uinta Basin Rail Feasibility Study, Uinta Basin, UT
HDR assisted UDOT and local officials in a collaborative effort to determine the economic viability of a freight rail line in the Uintah Basin and to analyze the potential environmental consequences from construction and operation of the rail line.
Role: GIS Manager

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Role: GIS Manager

Jones & DeMille, Uinta Basin Infrastructure Evaluation and Prioritization, Uinta Basin, UT
HDR Supported the Seven County Infrastructure Coalition with broad support for program management and infrastructure investment analysis. Main responsibilities included engineering, project recommendations and screening criteria, economic analysis, GIS, and data management support.
Role: GIS Manager

UDOT, West Davis Corridor Environmental Impact Study, Davis County, Utah
HDR prepared an EIS for a new 20-mile four-lane highway with UDOT and FHWA as the lead agencies. The studies included identification and analysis of 46 corridors over a large study area which were screened downed to four reasonable alternatives in a 2-month period. Main issues evaluated for each corridor included wetlands and Clean Water Act requirements, wildlife, economics, air quality, noise, and social impacts.
Role: GIS Manager

UDOT, Mountain View Corridor, Salt Lake County, UT
The Mountain View Corridor is 35 miles of planned freeway, transit, and trail system that will be implemented in phases. HDR's services thus far have included providing utility transmission expertise corridor wide, developing the design framework for phased implementation, and providing program management services for three segments of construction.
Role: GIS Manager
Ryan Cole, PhD, PE, DGE  
President / Principal  

Years of Professional Experience  
19  

Education  
PhD, Civil Engineering, Brigham Young University  
BS, Civil Engineering, University of Utah  

Licensure  
Professional Engineer – Utah No. 368476, Nevada No. 21915, Wyoming No. 14031, Louisiana No. 38532, Mississippi No. 25568, Texas No. 122513, Colorado No. 0050918, Idaho No. 17376  

Biographical Sketch  
Ryan will use his soil/rock mechanics background to support the design team in addressing geotechnical / geologic conditions and risks as various rail alignments are considered and ultimately selected. Ryan has provided geotechnical design and assessment services for many high profile corridor projects including: feasibility studies, alignment alternative evaluations, geotechnical design, and construction related support for: rail lines, pipelines, canals, and highways, bridges, and utility corridors through mountainous terrain. Applicable examples include:  

- UTTR Rail Spur – Ryan serves as project manager for geotechnical services, drilling, logging, laboratory testing, and analyses associated with a 14-mile long rail spur. Project includes drilling and coring over 45 test holes and CPT soundings (over 2,400 lineal feet) laboratory testing, geotechnical analyses and data report.  
- Provo River Canal Enclosure – Ryan provided geotechnical / geologic analysis and design support for this 22 mile canal enclosure with a 126-in diameter steel pipe through technically challenging terrain addressing geologic hazards (fault zones, and active landslides) and geotechnical risks. This project included soil and rock sampling of over 44 test holes  
- Geotechnical design lead responsible for geotechnical/geologic evaluations and risk assessments for the I-80 Mouth of Parley’s Canyon to Lamb’s Canyon roadway widening which included addressing landslides, rock cut slopes, and rockfall related risks. Ryan’s experience will help the team identify and address geotechnical and geologic risks along the UBPR Project.  
- Geotechnical design lead for the I-80 Trunk line Replacement CM/GC project that included geotechnical design and geologic risk assessments for the installation of 10,500 lineal feet of a 66-inch RCP and 6,660 laterals with excavations up to 100-feet deep through highly variable bedrock, soil, and intermediate geomaterials.  
- Pipeline Distress assessments for a confidential client that included remediation, and risk assessments for 26,000 lineal feet of 36-inch high-pressure steel pipeline through mountainous topography distressed by historic mine subsidence.  
- Geotechnical Design Lead for 7 design-build and 4 CM/GC project in the past 10 years on projects with construction costs ranging from $5.0MM to over $1.7B.
SUMMARY
Carol Ravano has 26 years of geotechnical and civil engineering experience and is the company wide manager of the Railroad Engineering and Construction Management Groups at McMillen Jacobs. Ms. Ravano specializes in management of construction projects and geotechnical site investigations and analyses for Class 1 and regional railroads; state, county, and city agencies; and private owners. Ms. Ravano has designed numerous railroad geotechnical and tunnel rehabilitation projects, many of which have been constructed under live track conditions. She has performed construction monitoring, ensuring that procedures, materials, and structures meet contract specifications, safety requirements, and environmental regulations.

EDUCATION
M.S. Civil Engineering, University of California, Berkeley, 1984
B.S. Civil Engineering, University of California, Berkeley, 1983

PROFESSIONAL REGISTRATIONS
Professional Engineer: California, No. 41061, 1986
Professional Engineer: Washington, No. 28880, 1992

EXPERIENCE
Wind River Tunnels 4 and 5 Rehabilitation, BNSF Railway Company, Casper, WY (2011–2012)
Ms. Ravano managed the McMillen Jacobs team that performed design and construction management services for repairs for Tunnels 4 and 5 approximately 22 miles south of Thermopolis, Wyoming. A site visit of Tunnel 4 was performed in response to a collapse of several timber sets that form the extended portal structure on the south end of the tunnel. Repair recommendations were made and BNSF decided to have all tunnels inspected to evaluate the need and possible locations for rock bolts. Construction included the removal of timber sets, installation of resin grouted rock bolts (RGRB) or cement grouted double corrosion protected (DCP) anchors, and installation of welded wire mesh. During construction, McMillen Jacobs provided inspection services.

UPRR-Tunnel 7-Ayers Tunnel, Union Pacific Railroad, Pasco, WA, USA (2010–2013)
As project manager, Ms. Ravano performed the site reconnaissance, facilitated the design and bid document production, managed staffing, budget, and scheduling. Built in 1899, the 623-foot-long Ayers Tunnel had original wooden portal structures and was lined with timber sets. McMillen Jacobs prepared a remedial design to remove the portal structures and timber sets to improve clearance for double stack container trains, eliminate the risk of fire and decrease maintenance. Also provided on-site construction observation.

Coos Bay Rail Tunnels Rehabilitation, Oregon International Port of Coos Bay, OR (2009–2016)
Ms. Ravano served as the project manager overseeing all McMillen Jacobs work, with particular focus on rehabilitation of four tunnels. When the Port of Coos Bay purchased a 120-mile-long railroad line, from RailAmerica, the line was in disuse and disrepair. McMillen Jacobs evaluated seven tunnels built between 1911 and 1916, designed repairs, and provided resident engineering during construction. McMillen Jacobs also provided geotechnical input on slope stability and bridge support. Repairs included removal and disposal of timber linings (support sets, lagging, and cribbing); removal and disposal of rock, mud, and debris; installation of steel support sets, channel lagging, concrete, rock bolts, backfill concrete, and shotcrete; and localized re-establishment of tunnel track drainage within and adjacent to the tunnels. To repair sections of four railway tunnels, design calculations, drawings, and specifications were prepared, and the bid process was facilitated.

Great Salt Lake Causeway Stability Assessment and Repair, UPRR, Ogden, UT (2007–2015)
Ms. Ravano was the project manager for the ongoing monitoring of the causeway. McMillen Jacobs’ field-based design approach to repair the causeway used soft ground soil mechanics techniques to bridge a hole in the dense salt layer. McMillen Jacobs continues to monitor the embankment settlement.
Christopher Rand, PE
Locomotive & Rail Car Facilities

Chris has over 15 years of extensive experience in engineering design and construction management for Class 1 and short line railroads. He has supervised the design and construction of numerous projects including track yard bridge grade crossings studies fueling facilities yard offices mechanical facilities car shops and diesel shops.

RELEVANT EXPERIENCE

Confidential Client, Classification Yard, Robertson County, TX, Facilities Lead
This project included over a dozen new buildings, car repair, locomotive repair, locomotive fueling, and industrial waste treatment facilities.

Confidential Client, Locomotive Facilities, Robertson County, TX, Facilities Lead
This project consists of the development of several options for new locomotive facilities to support a classification yard in Robertson County, Texas. Plans and estimates were developed for the site, track, and building layouts. Some of the infrastructure included a service track, locomotive shop, ready tracks, welfare buildings, warehouse space, fueling, miscellaneous fluids, and a roadway network.

UPRR, Dolores Mechanical Facilities, Carson, CA, Project Manager
HDR worked with UP’s Facilities and Mechanical groups to develop conceptual plans for facilities to house a new automotive wheel trueing facility at the Dolores yard.

UPRR, Locomotive Shop Conceptual Design, Denver, CO, Project Manager
HDR worked with UP’s Facilities and Mechanical groups to develop conceptual plans for a new locomotive repair shop at the North Yard in Denver, CO. The facility included 3 running repair tracks with full-length pits and work platforms at the locomotive running board elevation. Space was also included for offices, lockers, lunch room, warehouse, pumping facilities, treatment plant, and other support functions. Locomotive flow was considered and put into the design of the track & building layout.

BSNF, Pasco Diesel Shop, Pasco, WA, Project Manager
Review of a previous design effort that was shelved due to economic concerns. As part of this effort, HDR provided documentation to support the relocation of these services from the Seattle area, investigation of Public Private Partnership funding and development of a design-build package to expedite construction of the project.

Wisconsin DOT, Train Maintenance Facility Design, Milwaukee, WI, Facilities Lead
As a subconsultant, HDR provided design services for the 30% and 60%-level design for a new state-of-the-art train set maintenance facility for two new Talgo train sets purchased by the State of Wisconsin. The new train sets were intended to provide service on Amtrak’s Hiawatha Service operating between Chicago and Milwaukee.

BNSF, Galesburg Diesel Shop Expansion, Galesburg, IL, Program Manager
Provided Program Management Services associated with the design and construction of a new locomotive repair shop in Galesburg, Illinois. The design process was managed in compliance with goals set forth through the programming phase.

BNSF, Wheel Truing Pit, Minneapolis, MN, Project Manager
Design and construction management of a new pit to house a new Hegenscheidt underfloor wheel truing machine installed at BNSF’s Northtown diesel shop in Minneapolis, Minnesota. The pit was constructed within the heavy repair area of the existing, fully operational diesel shop. All of these operations were required to stay in service for the duration of the construction period. Plans and specifications were developed to minimize the impact on day-to-day diesel shop activities.
Karen Nichols  
**Water Resources**

Karen is an expert in working with public and private clients that focus on environmental planning, compliance, permitting, and mitigation. She specializes in CWA compliance for surface water quality, wetlands, stormwater quality permitting and monitoring, and watershed analysis projects. Karen has led multiple modeling and watershed analysis projects, including urban watershed model development and rural resource management watershed planning, which included stakeholder involvement and information. Ms. Nichols has managed projects to design and construct long-term management (post-construction) stormwater treatment facilities for the removal of pollutants from municipal urban land uses and industrial facilities. She has experience with alternative delivery methods, design-build and public private partnerships specifically for stormwater infrastructure and water quality treatment.

**EDUCATION**
Bachelor of Science, Civil Engineering, Illinois Institute of Technology, 1980

**REGISTRATIONS**
Professional Engineer:  
Utah 170589-2022  
Washington 30107  
Oregon 15909PE  
Certified Professional in Storm Water Quality (CPSWQ), US, #0428  
Certified Professional in Soil Erosion and Sediment Control, US 2278

**PROFESSIONAL MEMBERSHIPS**
International Erosion Control Association, Member

**RELEVANT EXPERIENCE**

**Union Pacific Railroad, Great Salt Lake Culvert Closure and Bridge Construction Permitting Assistance and Compliance Monitoring, Box Elder, Utah**
HDR provided alternative analysis and Great Salt Lake water quality modeling, to support permitting of infrastructure improvements to the causeway. Stakeholder and regulating agencies required resource evaluations, interim chemical and biological monitoring of the Great Salt Lake, and Level I and Level II anti-degradation review. Due to the phasing of the infrastructure improvements, the project elements were authorized under 3 U.S. Army Corps of Engineers 404 permits and supported by 2 State Water Quality Certifications. Final authorization allowed the construction, preparation of the sampling and analysis plan along with a quality assurance project plan for compliance monitoring. HDR is currently providing water quality monitoring and reporting to meet project performance standards.  
**Role:** Project Manager

**Union Pacific Railroad, Communal Track, Salt Lake City, Utah**
HDR provided environmental permitting services to authorize construction of a Union Pacific Railroad siding on Promontory Point, Box Elder County, Utah. Due to proximity of the project to the Great Salt Lake, the U.S. Army Corps 404 permit required an individual Utah State 401 Water Quality Certification. Services included wetland delineation, water quality evaluation, cultural survey and regulating agency coordination.  
**Role:** Water Resources

**UDOT, West Davis Corridor Environmental Impact Study, Davis County, Utah**
HDR prepared an EIS for a new 20-mile four-lane highway with UDOT and FHWA as the lead agencies. The studies included identification and analysis of 46 corridors over a large study area which were screened down to four reasonable alternatives in a 2-month period. Main issues evaluated for each corridor included wetlands and Clean Water Act requirements, wildlife, economics, air quality, noise, and social impacts.  
**Role:** Water Quality

**UDOT, SR-30 Environmental Impact Study, Cache County, Utah**
HDR prepared a corridor study, EIS and preliminary engineering for roadway transportation improvements on SR 30 in Cache County. The study was a comprehensive evaluation of environmental, cultural, social, and economic impacts of various alternatives. The project required extensive coordination with local, state, and federal resource agencies during the alternatives-development process, and with the U.S. Army Corps of Engineers on an approach to the wetland impacts analysis and permitting.  
**Role:** Water Resources
MATT EDWARDS, PH.D., RPA, CULTURAL RESOURCES LEAD

Dr. Edwards is a professional archaeologist and regional scientist in SWCA's Science Leadership Program. He has authored or co-authored over 140 technical reports to government agencies and private entities and been involved at various levels—from field assistant to project manager—on hundreds of projects to comply with the National Historic Preservation Act (NHPA) and National Environmental Policy Act (NEPA). His work in academia has resulted in several published articles or book chapters, some of which are published in peer-reviewed scientific journals. He is also experienced in other aspects of cultural resources management including historic preservation, architectural history, public history, and tribal consultation. He has experience overseeing all aspects of project management including planning and proposals, supervising field and laboratory work, writing final reports, and working with agencies and clients to meet their needs. He is also the director of SWCA’s Salt Lake City-based Cultural Resources Program.

SELECTED PROJECT EXPERIENCE (*Denotes experience while at HDR)

Gateway West Implementation Support; PacifiCorp; Multiple Counties in Multiple States. PacifiCorp is proposing to construct and operate the Gateway West Transmission Line, consisting of approximately 990 miles of a new 230-kilovolt (kV), 345-kV, and 500-kV alternating current electric transmission line system. The Project crosses public lands managed by the Bureau of Land Management and states as well as some private land. Intensive cultural resources investigations were completed for the approved route. Role: Program Director.

Sigurd Red Butte Cultural Resources Report; PacifiCorp; Utah. The Sigurd to Red Butte 345-kV #2 Project consists of approximately 170 miles of single-circuit 345-kV construction from the existing Sigurd Substation near Richfield, Utah, to the existing Red Butte Substation near Central, Utah. The route exits the Sigurd Substation and crosses Interstate 70, Fremont Indian State Park, and inventoried roadless areas in the Dixie National Forest. SWCA completed analysis and reporting for archaeological data recovery efforts. Role: Program Director.

Class II Archaeological Inventory for the Proposed Uinta Basin Rail Project; Carbon, Duchesne, Uintah, and Utah Counties, UT; Utah Department of Transportation (UDOT).* Conducted a pedestrian archaeological survey of two proposed rail routes for the Uinta Basin Rail Project. The archaeological analysis consisted of a Class I background records search and a Class II survey of selected portions of the two proposed routes based upon a predictive model created specifically for the project. Also supervised survey of architectural resources and a preliminary study for the identification of potentially affected traditional cultural properties (TCPs). Role: Project Manager & Principal Investigator.

Tribal Consultation and Section 106 Services for Central Utah Rail Project EIS. Project Director for Cultural Resources and Tribal Consultation.* Primary cultural resources professional responsible for coordinating government to government cultural resources consultation between the Surface Transportation Board and interested tribes, including: the Cedar City and Konosh Bands of the Paiute Indian Tribe of Utah; the Kaibab Band of Paiute Indians; the Ute Indian Tribe, and the Hopi Tribe. Project also involved consultation with the Utah State Historic Preservation Office (SHPO) toward development and finalization of a Programmatic Agreement (PA). Role: Project manager.
Michael Richardson
Property Acquisition

Mike has 11 years of ROW acquisition experience in Utah, Idaho, and North Dakota. He has worked as a ROW agent, relocation agent, site acquisition specialist, and leasing and zoning manager. He has experience in residential, commercial, and agricultural acquisition, and in residential and business relocation, leasing, zoning and permitting.

RELEVANT EXPERIENCE

**UDOT, Uinta Basin Rail Feasibility Study, Uinta Basin, UT**
HDR assisted UDOT and local officials in a collaborative effort to determine the economic viability of a freight rail line in the Uintah Basin and to analyze the potential environmental consequences from construction and operation of the rail line.
**Role:** Acquisition Agent

**UDOT, Mountain View Corridor, Salt Lake County, UT**
Mike provided negotiation and acquisition, and conducted relocation assistance under the Uniform Relocation Act. Overall, the HDR team provided ROW acquisition and relocation services for more than 400 parcels, including full and partial takes with numerous complex relocations. This effort involves acquiring hundreds of parcels of all types, including farmlands, residential, commercial and industrial.
**Role:** Acquisition Agent

**Questar Pipeline Company, Regulator Station Right-of-Way Acquisition, UT**
HDR is providing management and oversight for the property acquisition for regulator stations site(s) and pipeline easements. Services include identification of acceptable properties, identification of landowners, landowner contact and negotiation for purchase of the property, and performing necessary due diligence for the site.
**Role:** Acquisition Agent

**Bonneville Power Administration, Palisades-Swan Valley Transmission Line Rebuild, Bonneville County, ID**
HDR provided realty services to BPA’s Palisades-Swan Valley No. 1 (existing 115kV) Transmission Line rebuild project. We acquired land rights for varying right-of-way depending on location as well as required access roads for approximately 65 separate parcels and approximately 28 different landowners. Realty services also included providing recommendations to BPA in the support of settlement damages for any construction related activities.
**Role:** Acquisition Agent

**Bonneville Power Administration, Hooper Springs Transmission Line and Substation, Bonneville County, ID**
The project includes construction of a new 32-mile, single-circuit 115 kV transmission line. In an effort to select the transmission line route with the least amount of impact to landowners in the area, Mike is acquiring permission-to-enter permits from landowners which allow engineers, environmental specialists, and survey crews access to properties to perform site inspections and surveys.
**Role:** Acquisition Agent

**Central Utah Water Conservancy District, Vineyard Connector, CWP North Shore Aqueduct Right-of-Way Services, Utah County, UT**
The Segment consists of approximately 40,000 feet of 60-inch pipe. As part of the team providing design and construction management, HDR provided right of way services. The pipeline route will crosses existing railroads, streams, utilities, and city/county/state roads as well as private lands. Effective contact and coordination with all of the affected entities was an integral part of the project.
**Role:** Acquisition Agent