

# ICICLE CREEK ENGINEERS

Geotechnical, Geologic and Environmental Services

## Brian R. Beaman, PE, LG, LHG

Brian is a principal engineer, geologist and hydrogeologist with over 25 years of local geotechnical, geologic and hydrogeologic experience. He has planned and completed hundreds of site exploration programs as a basis for developing geotechnical design parameters for public and private sector projects. Brian has extensive experience with federal, state and local agency regulations. With a thorough understanding of site conditions and agency requirements, he effectively evaluates geotechnical design options. In addition to his expertise in geotechnical engineering issues associated with soil, rock and ground water conditions, he has developed an expertise in dealing with steep slope, landslide and coal mine hazards. Mr. Beaman has extensive knowledge of the geologic, hydrogeologic and geotechnical conditions throughout Washington State and the Pacific Northwest.

### Selected Project Experience:

#### Mountain Park Pump Station, Issaquah, Washington

Brian provided principal level geotechnical engineering services associated with adding a second pump station and expanded parking at the Mountain Park Pump Station site. Subsurface conditions were explored by drilling a test boring using limited-access drill equipment. Brian provided recommendations for seismic design criteria, site preparation and grading including stripping requirements, structural fill criteria and reuse of onsite excavated soil for structural fill, trench backfill and bedding, foundation support, including allowable soil bearing pressures and settlement estimates, support of on-grade floor slabs, lateral earth pressures, and surface and subsurface drainage requirements.

Owner: City of Issaquah	Contact: Tony Nguyen	Phone: (425) 837-3437
-------------------------	----------------------	-----------------------

#### Buckley Substation, Buckley, Washington

Brian provided geotechnical engineering services to Puget Sound Energy (PSE) for the proposed Buckley Substation. The approximately 2-acre proposed substation site will include two dead-end towers and two transformers. Typically, these facilities are supported on concrete pads designed for an allowable soil bearing pressure of 1,500 pounds per square foot (psf). Services included drilling three test borings, field infiltration testing, laboratory testing and the evaluation of geologically hazardous areas (primarily seismic). He provided recommendations for site preparation and grading, underground utility trench backfill materials including the suitability of excavated materials for use as backfill and bedding, recommendations for foundation support, including minimum footing dimensions, embedment depths, allowable soil bearing pressures and settlement estimates, support of on-grade slabs including criteria for a capillary break and subgrade modulus, lateral earth pressures including active pressures for retaining walls and passive earth pressures on footings, pavement subgrade preparation, seismic design criteria, and surface and subsurface drainage requirements. Because of the soft ground conditions, Brian provided recommendations for deep foundation support (piles).

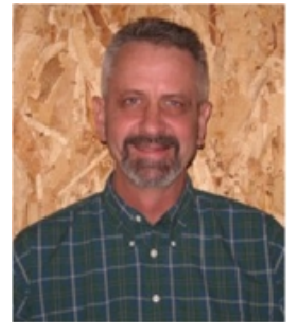
Owner: PSE	Contact: Lynn Thompson, PE	Phone: (425) 456-2801
------------	----------------------------	-----------------------

**Title:** Principal Engineer, Geologist and Hydrogeologist

**Years employed by firm:** 13

**Total years of professional experience:** 25

**Education:** M.S., Geological Engineering, University of Idaho, 1982  
B.S., Geology, Western Washington University, 1979



### Registrations and Licenses:

Professional Engineer / WA / 1987  
Licensed Engineering Geologist and Hydrogeologist / WA / 2002  
Professional Geologist / ID / 1985  
Registered Geologist / OR / 1989  
Registered Geologist / CA / 1988

### Key Areas of Experience:

- Geotechnical Engineering
- Slope Stabilization
- Critical Areas Assessment and Mitigation
- Earth Dams and Seepage
- Rock Mechanics



Buckley Substation Site

---

### **Suncadia Resort Project, Roslyn Area, Kittitas County, Washington**

The Suncadia Resort project near Roslyn in Kittitas County involves the construction of over 4,000 homes and 55 miles of new roads and utilities. Brian has provided principal level geotechnical engineering services since ICE's initial involvement on the project in 1997 as part of the Environmental Impact Statement (EIS) team. For the EIS, Brian detailed the coal mine hazards at the project site. Since 2004, Brian has been providing geotechnical engineering services to Suncadia for design of roads and utilities along with various other phases of the project. Some of the project elements include the fire station, recycling center, pump stations, administration building, turf care facilities for golf courses, parking lots, community activity center, a large-diameter arch culvert, road alignment engineering and gravel pit reclamation. Brian has managed up to four staff geologists at the site during the construction seasons of 2004 through 2008 providing construction observation services and compaction testing of soils for utility backfill, road subgrade preparation, monitoring of mass grading associated with the Bullfrog Pit restoration project, and infiltration testing.

<i>Owner: Suncadia, LLC</i>	<i>Contact: Cape Powers</i>	<i>Phone: (509) 649-3906</i>
-----------------------------	-----------------------------	------------------------------



*Suncadia Resort's Bullfrog Pit Restoration during Lodge Construction*

### **SR 410 (Chinook Pass) Roadway Washout Repair, Yakima County, Washington**

Brian evaluated the roadway washout that closed one lane of State Route (SR) 410 in early 2008 about one mile east of Chinook Pass in Yakima County. Uncontrolled surface water runoff caused severe erosion of the downhill embankment/slope resulting in soil loss on the surface and undermining of the roadway pavement shoulder. The road in this area was reduced to one-lane traffic until a repair method for the washout was evaluated and constructed. Brian met with WSDOT to observe the site conditions and discuss repair options. He reviewed geologic maps, completed geologic reconnaissance, observed core drilling, characterized soil/bedrock and ground water conditions, evaluated stability of the roadway embankment/slope, provided recommendations for soil/bedrock excavation, provided seismic design criteria based on the 2007 American Association of State Highway and Transportation Officials Load and Resistance Factor Design (AASHTO LRFD) manual with 2008 interim revisions (4th Edition), and recommendations for a Hilfiker welded wire wall and soldier pile wall (cantilevered and tie-back). Successful repair of the roadway with a soldier pile wall was complete in late 2008.

<i>Owner: WSDOT</i>	<i>Contact: Dave Jenkins</i>	<i>Phone: (360) 709-5455</i>
---------------------	------------------------------	------------------------------



*Chinook Pass Roadway Washout Drilling to Evaluate Repair Options*

### **Issaquah Highlands Development, Issaquah, Washington**

Brian has provided geologic and geotechnical engineering services associated with developing land with high density residential housing and roads at Issaquah Highlands, an area underlain by abandoned underground coal mines. As part of ICE's services, we drilled test borings into the underground mines to evaluate historic mine map accuracy, and the character of the overlying bedrock and unconsolidated soil deposits. He has also provided design geotechnical services for the construction of four large detention ponds (all of which required Washington Department of Ecology Office of Dam Safety review), underground pipelines in steep hillside areas, evaluation of ancient landslide features, fill options for park sites, and hydrogeologic evaluation of a large stormwater infiltration system. In addition to design services, since 2002, Brian has overseen geotechnical services during construction of roads, utilities, ponds, and other elements of site infrastructure.

<i>Owner: Port Blakely Communities</i>	<i>Contact: Kathy Burnaman</i>	<i>Phone: (206) 225-2307</i>
--	--------------------------------	------------------------------



*South Pond during Construction at Issaquah Highlands*