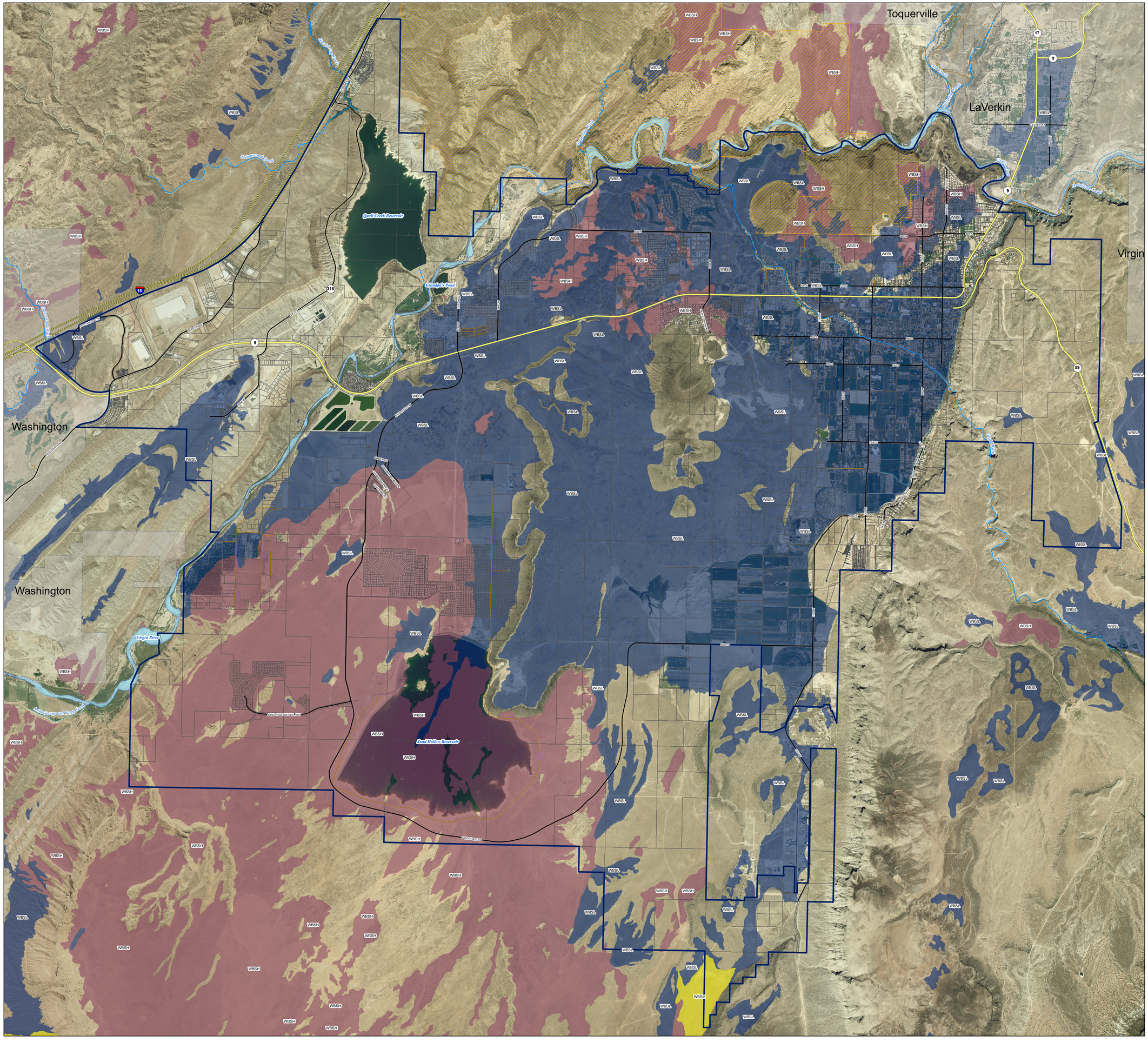

Adverse Construction Condition Wind-Blown Sand

Utah Geological Survey Special Study 127
Geologic Hazards and
Adverse Construction Conditions

St. George-Hurricane Metropolitan Area
Washington County, Utah, 2008

City of Hurricane
147 N 870 W
Hurricane, UT 84737
GIS

N

1 inch = 2,000 feet

0 950 1,900 3,800 5,700 7,600 Feet

Projection/Datum: Utah State Plane Zone South (FIPS 4303) NAD83

Publication Date: May, 2009

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Description

Unless stabilized by natural vegetation or by artificial means, loose sand will move in response to high-velocity and long-duration wind. Wind transport (e.g., saltation; deBlij and Muller, 1996) winnows the sand, producing a well-sorted (poorly graded) deposit that typically consists of subrounded to rounded sand grains with diameters ranging from very fine to coarse sand (0.1 to 1.0 mm; Bates and Jackson, 1987). The fines content (silt and clay fraction) in wind-blown sand is generally less than 10 percent. Depending on topography, wind characteristics, and sand availability, blowing sand may accumulate in dunes or sand sheets, both of which may cover large areas.

If development encroaches into areas with sandy soil and disturbs the natural vegetative cover, wind-blown sand may migrate across roads and bury structures (Mulvey, 1992; Hayden, 2004). Stabilized sand dunes and sand sheets may react in the same manner if disturbed by construction. High winds can move fines by suspension and produce sand and dust storms that reduce visibility to near zero and sandblast vehicles and structures.

Using This Map

The Wind-Blown-Sand-Susceptibility Map (plate 12) shows the location of areas susceptible to wind-blown sand in the St. George–Hurricane metropolitan area. The map is intended for general planning purposes to indicate where sand deposits susceptible to wind erosion may exist and where special studies may be required. The UGS recommends performing a site-specific geotechnical foundation/geologic-hazards study for all development at all locations in the study area. Site-specific studies can resolve uncertainties inherent in generalized mapping and help ensure safety by identifying the need for special foundation designs or mitigation techniques. The presence and severity of potential wind-blown-sand areas along with other adverse construction conditions and geologic hazards should be addressed in these investigations. If a potential for wind-blown sand is present at a site, appropriate design recommendations should be provided.

See section 7, "Problem Soil and Rock", "Wind-Blown Sand", in the full report for more detailed information.

Classification:
For a detailed explanation of the contents of this map, contact the Hurricane Planning Department for a copy of Special Study 127

Wind-Blown Sand

- WBSH-High: Modern sand-dune or sheet-sand deposits
- WBSM-Moderate: Mixed-unit geologic deposits, wind dominate transport
- WBSL-Low: Mixed-unit geologic deposits wth wind-blown component

Legend

- Hurricane City Limits
- Creek
- Canal
- Major Streets
- Dirt St.
- State Highway
- I-15
- Ramp
- RCDR Babylon Section
- Parcels
- Virgin River

Map Sources:

Parcels, Hurricane GIS Dept. Modified from Washington County GIS data downloaded Feb., 2009.

Streets, Hurricane City GIS Dept. Modified from Washington County GIS data downloaded Feb., 2009.

Aerial, USDA, National Agriculture Imagery Program (NAIP) 2006. Distributed by the Utah AGRC and reprojected to Utah State Plane, South (FIPS 4303), NAD 83 (CONUS), Survey Feet from the original. SID source file.