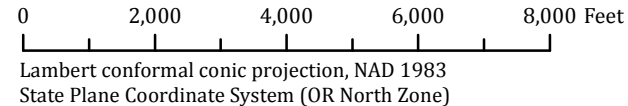
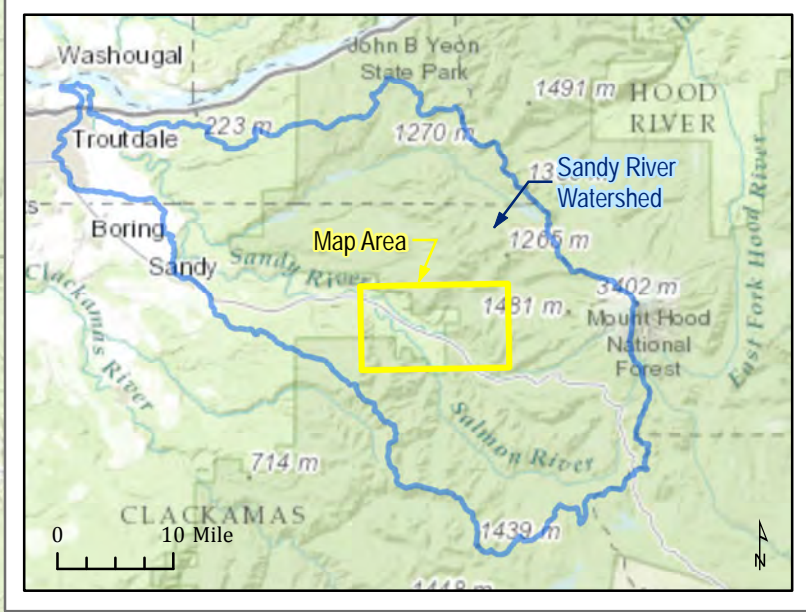
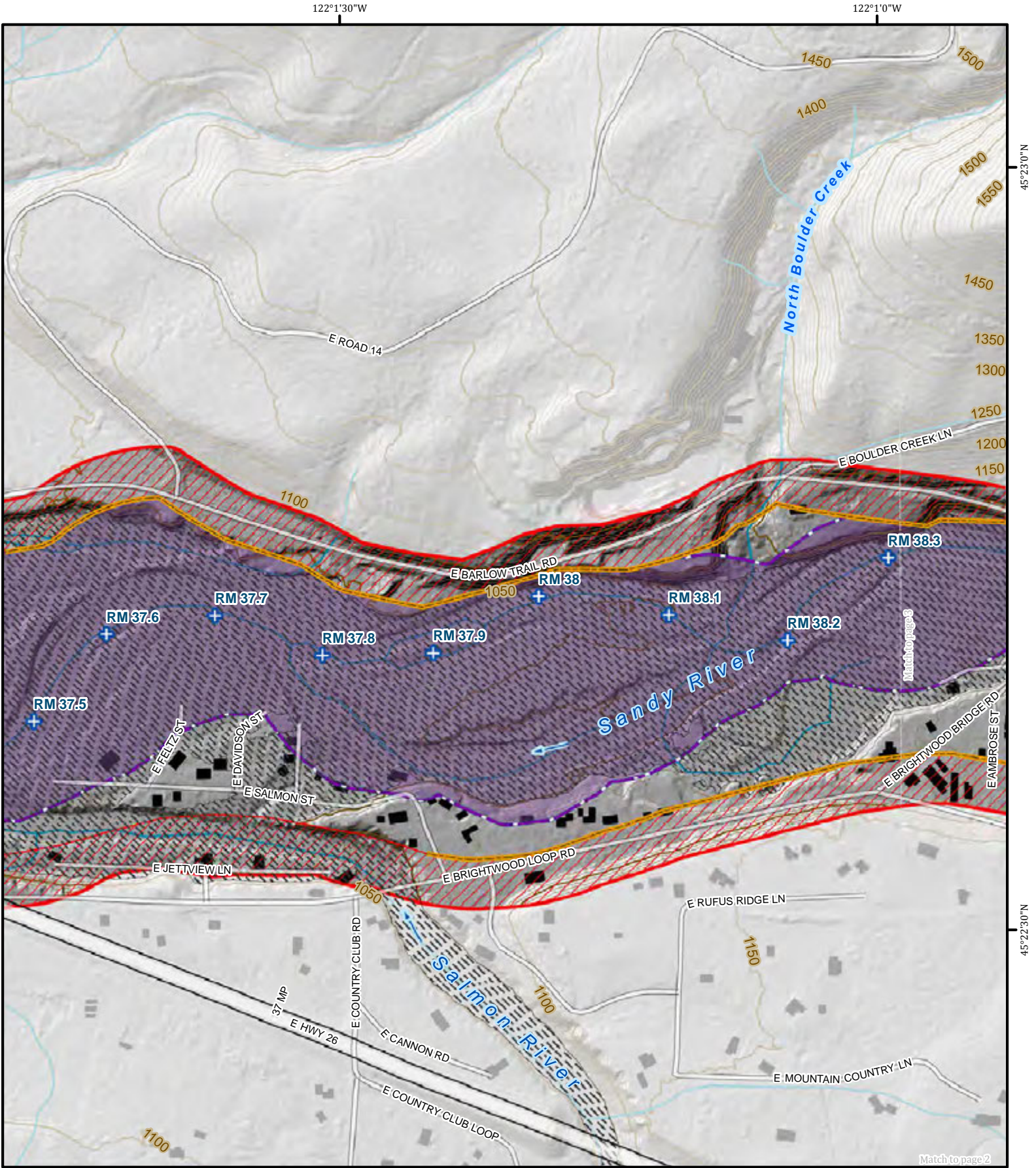
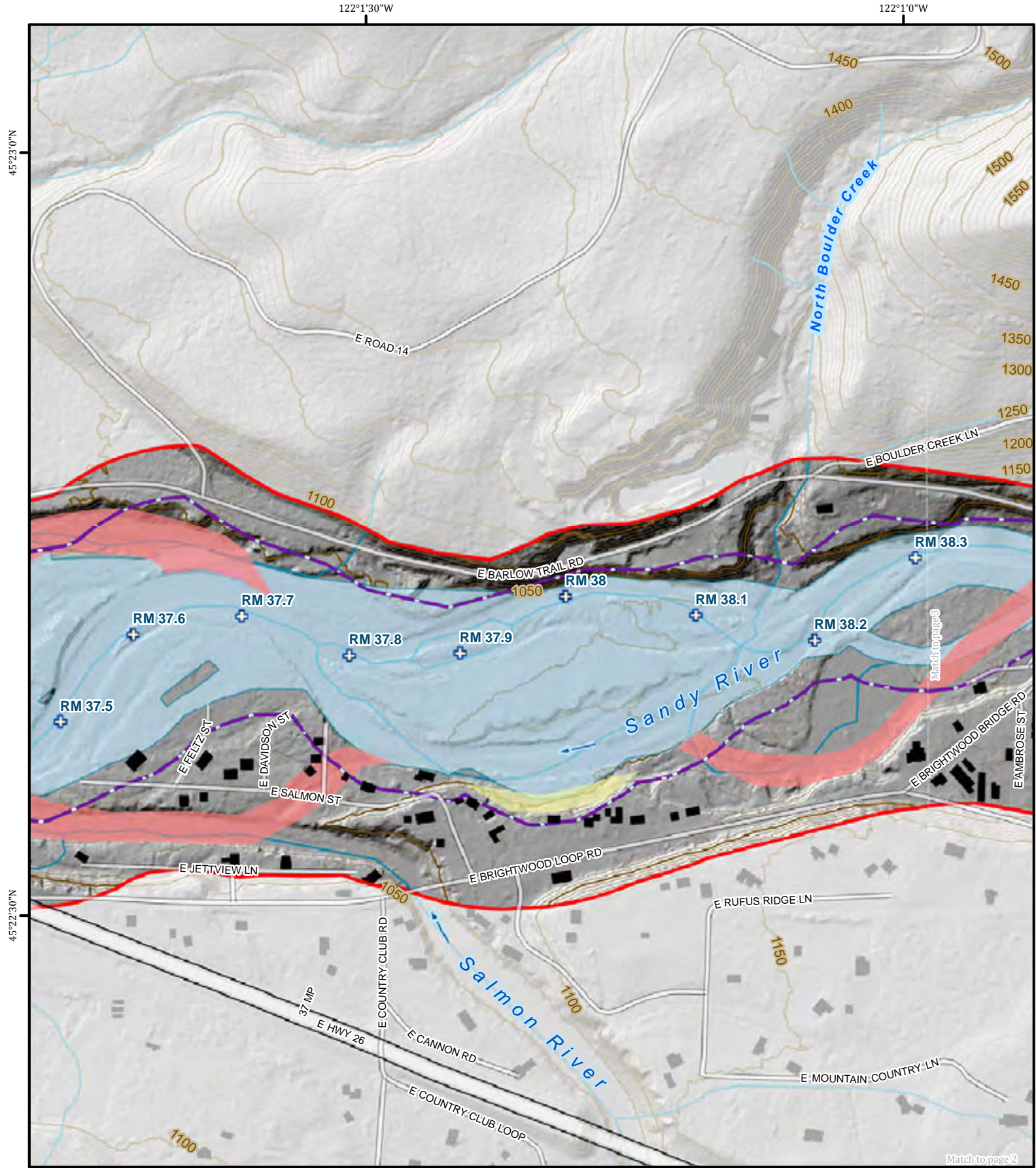


**Legend**

- USGS River Miles
- Streams (USGS NHD 2010)
- Roads (Clackamas Co.)
- Channel Migration Zone (CMZ)
- Emergency Protection Action Line (EPAL)
- HMZ + 100ft Buffer
- Historic Migration Zone (HMZ)
- Actively Eroding Trends
- Avulsion Hazard Zone (AHZ)
- Minimum CMZ Management Zone
- Area within 100 ft buffer
- FEMA 100 yr Flood Zone

Source: Oregon Department of Geology and Mineral Industries (DOGAMI). LiDAR data collected in: 2011 (upstream of Zigzag River) and 2012 (downstream of Zigzag River). CMZ, HMZ, AHZ, and EPAL delineated by Natural Systems Design, 2014. August 2011 FEMA FIRM Flood Zones obtained from DOGAMI



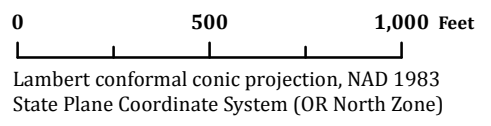


Upper Sandy River - Flood and Erosion Hazard Mitigation Evaluation Project

**Hazard and Risk Management Mapbook**

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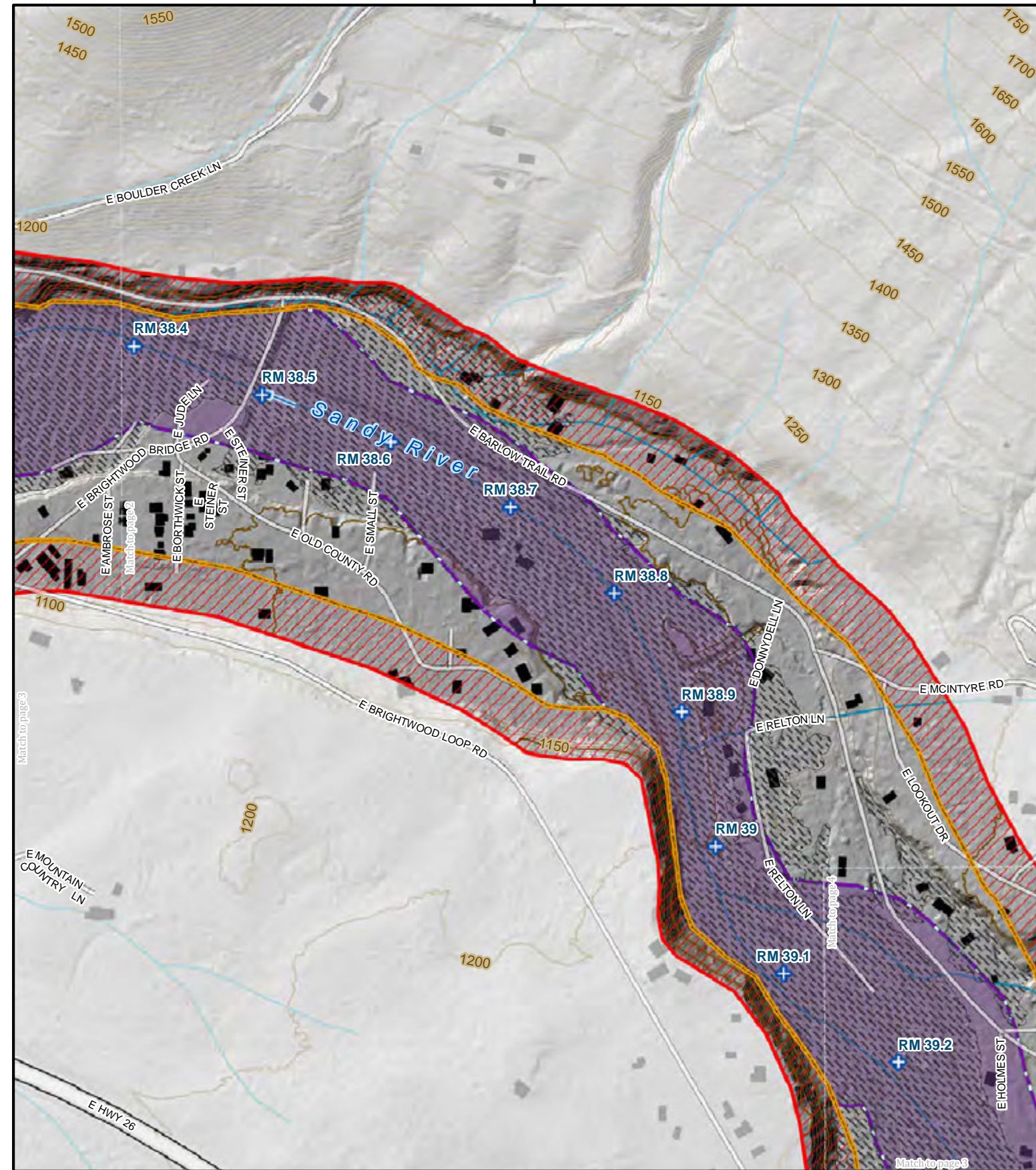
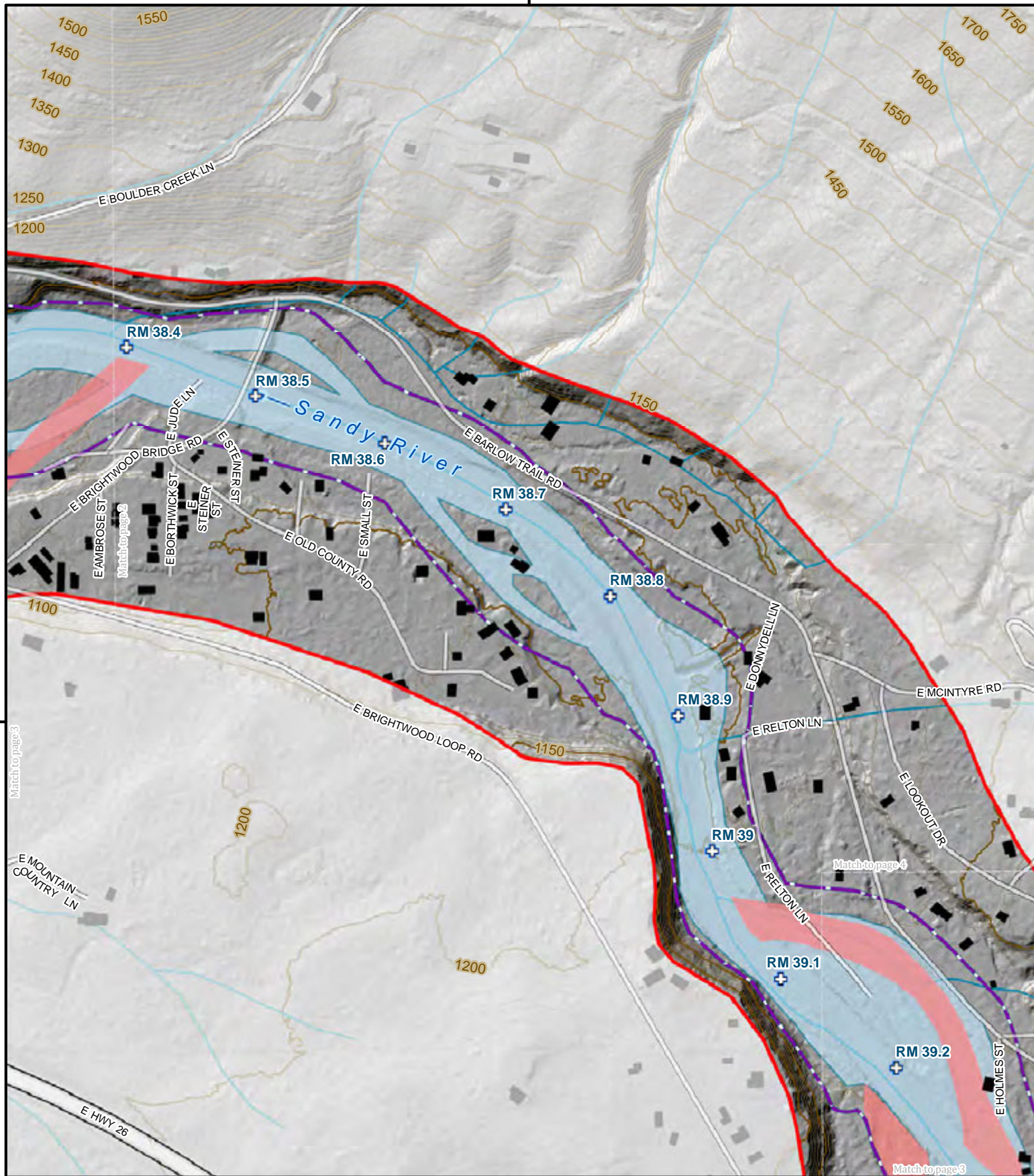
- USGS River Miles
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Data sources: 2013 LiDAR DEM (DOGAMI), Clackamas County, USGS, NSD

David French, NSD Date: 1/28/2015 Path: N:\Projects\Clackamas County\Sandy River Flood Study\GIS\Map\mxd\Sandy\_6k\_Mapbook\_2\Final\_Risk\_Hazard\_Mapbook.mxd

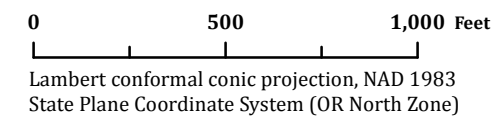
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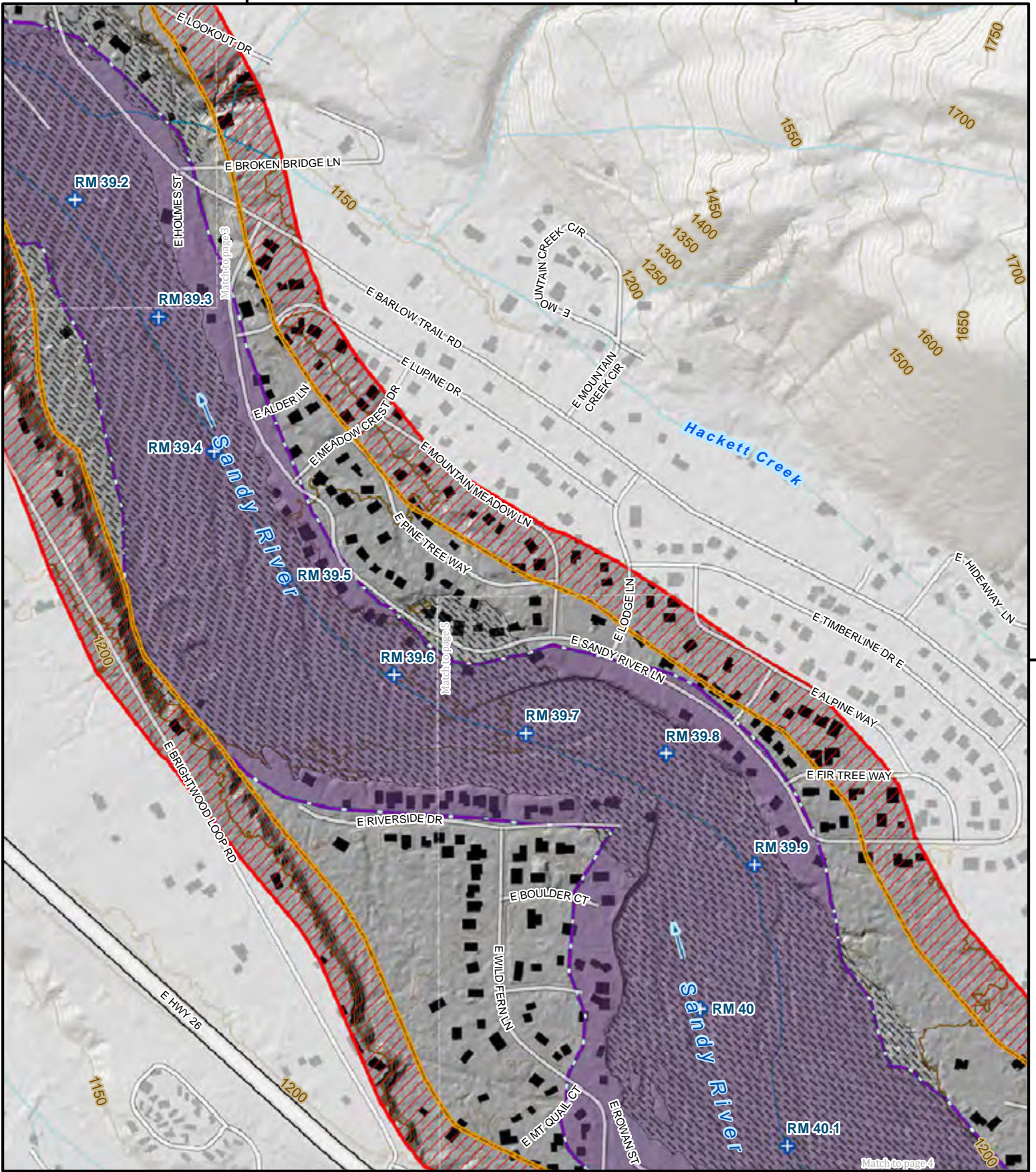
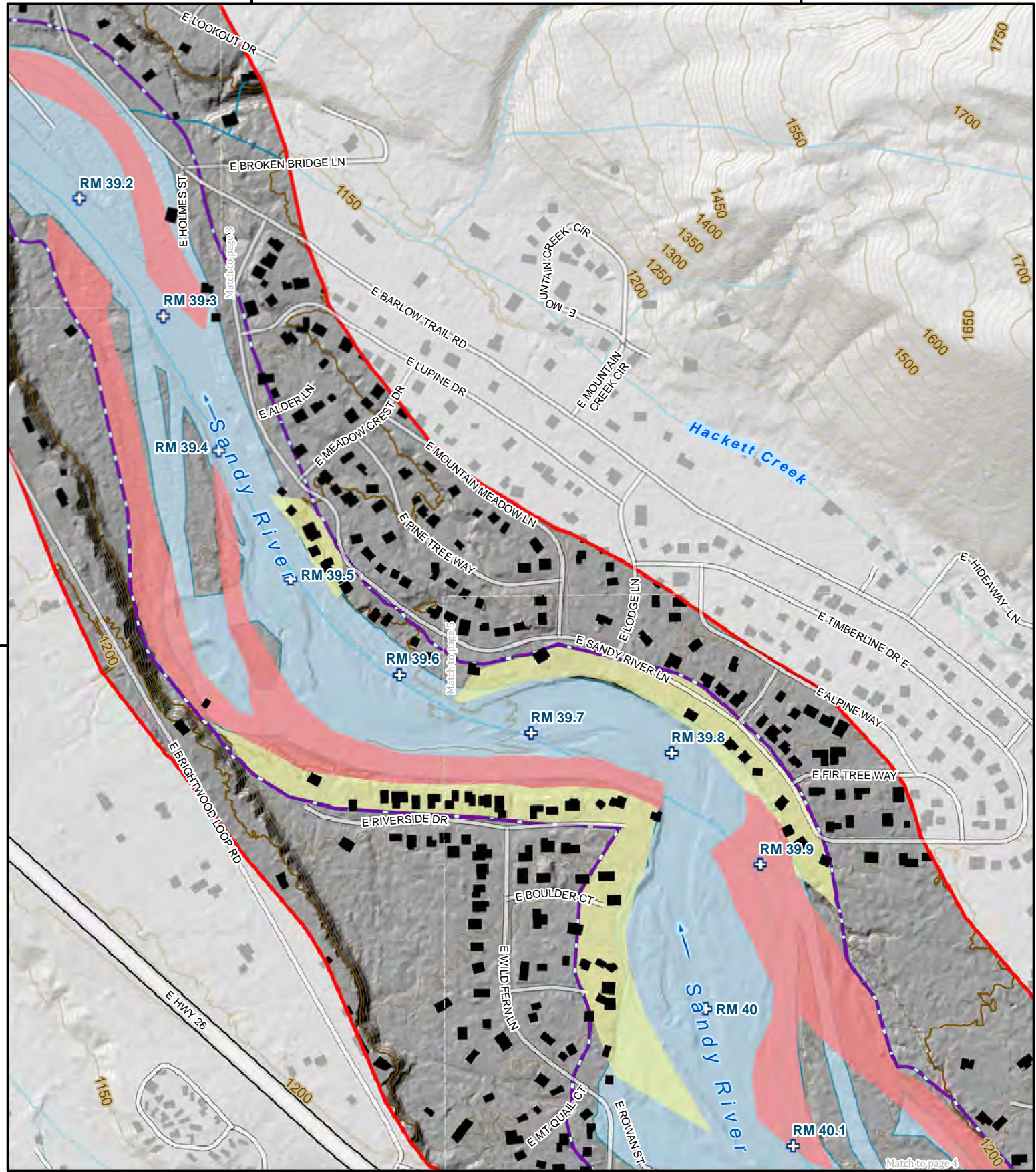


Upper Sandy River - Flood and Erosion Hazard Mitigation Evaluation Project

**Hazard and Risk Management Mapbook**













- USGS River Miles
- Streams (USGS NHD 2010)
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- CMZ
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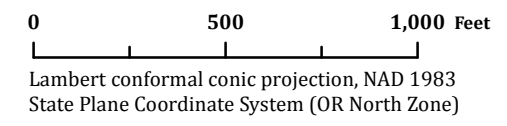


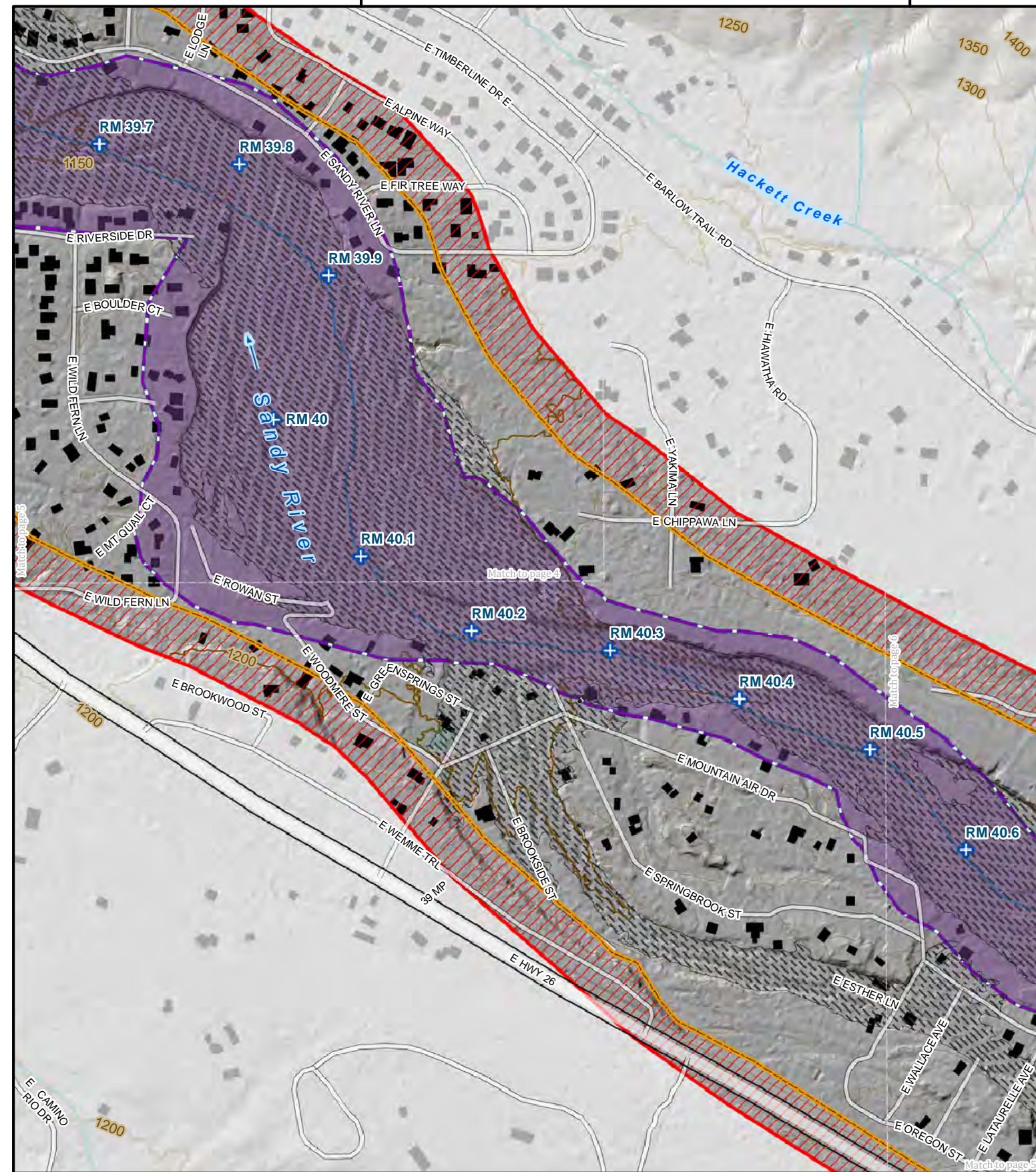
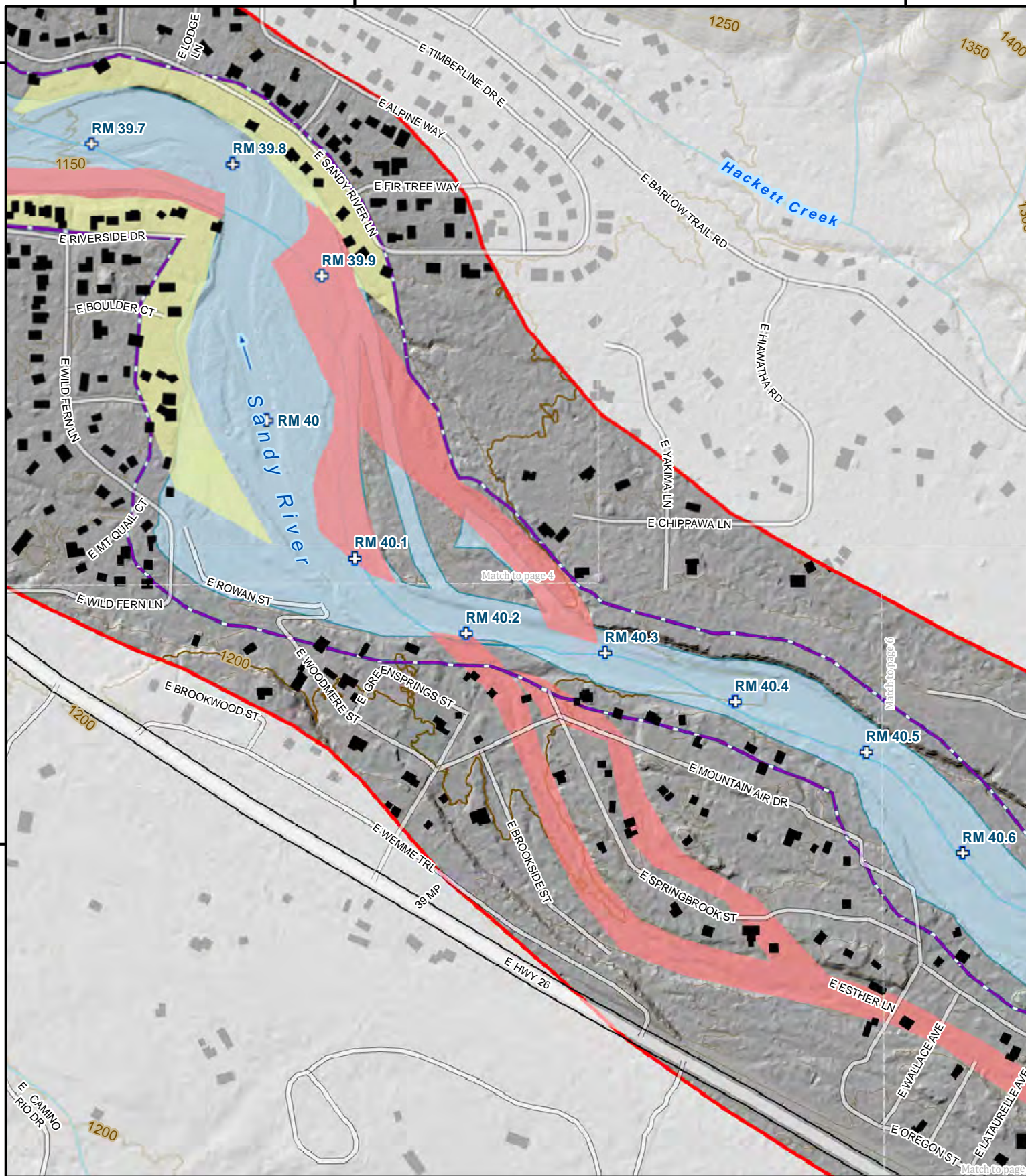


Upper Sandy River - Flood and Erosion Hazard Mitigation Evaluation Project

**Hazard and Risk Management Mapbook**













-  USGS River Miles
-  Streams (USGS NHD 2010)
-  Roads (Clackamas Co.)
-  CMZ
-  EPAL
-  HMZ + 100ft Buffer
-  HMZ
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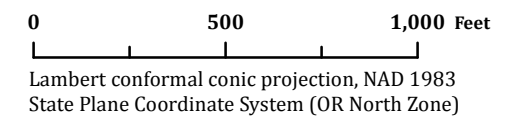


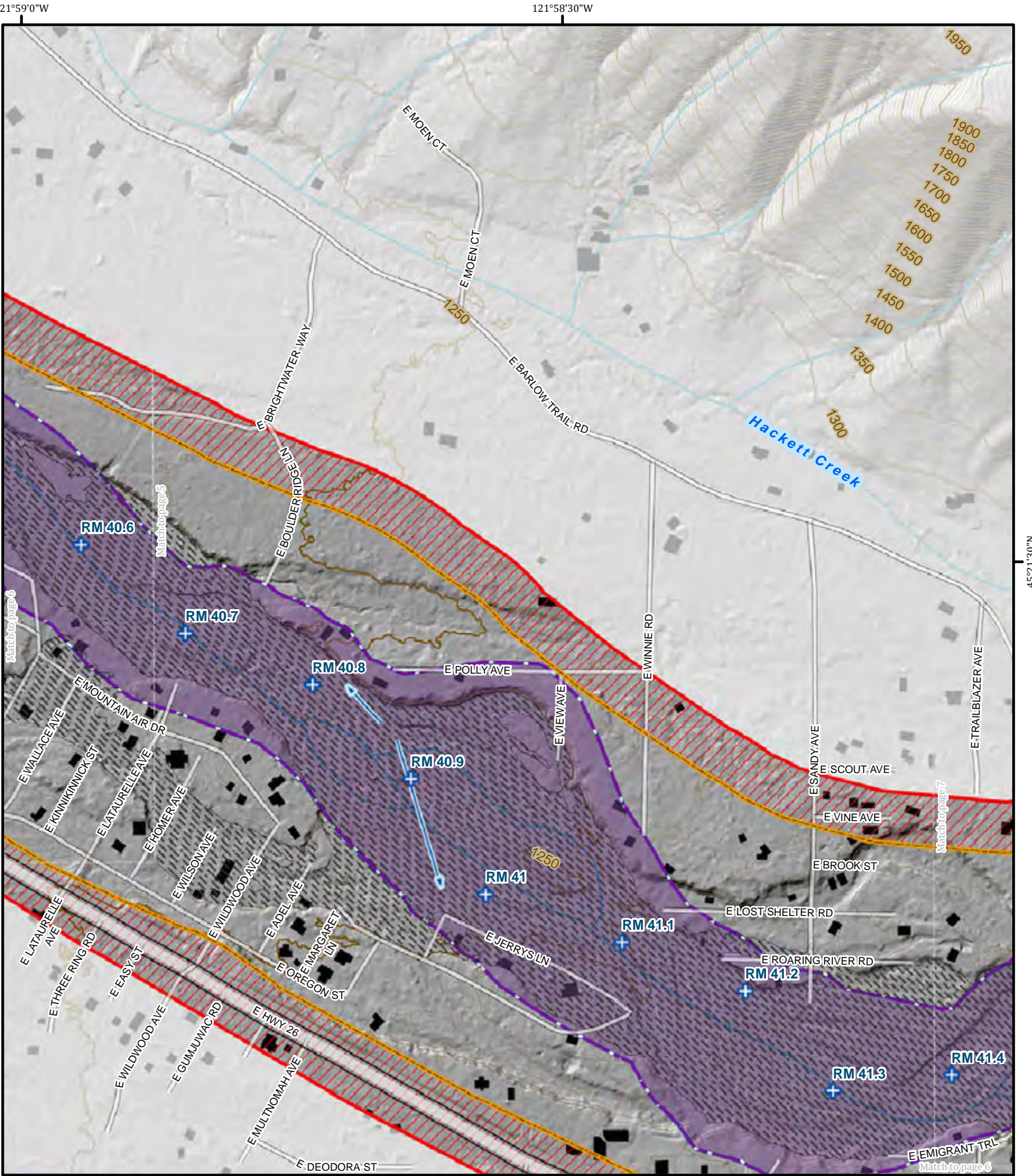
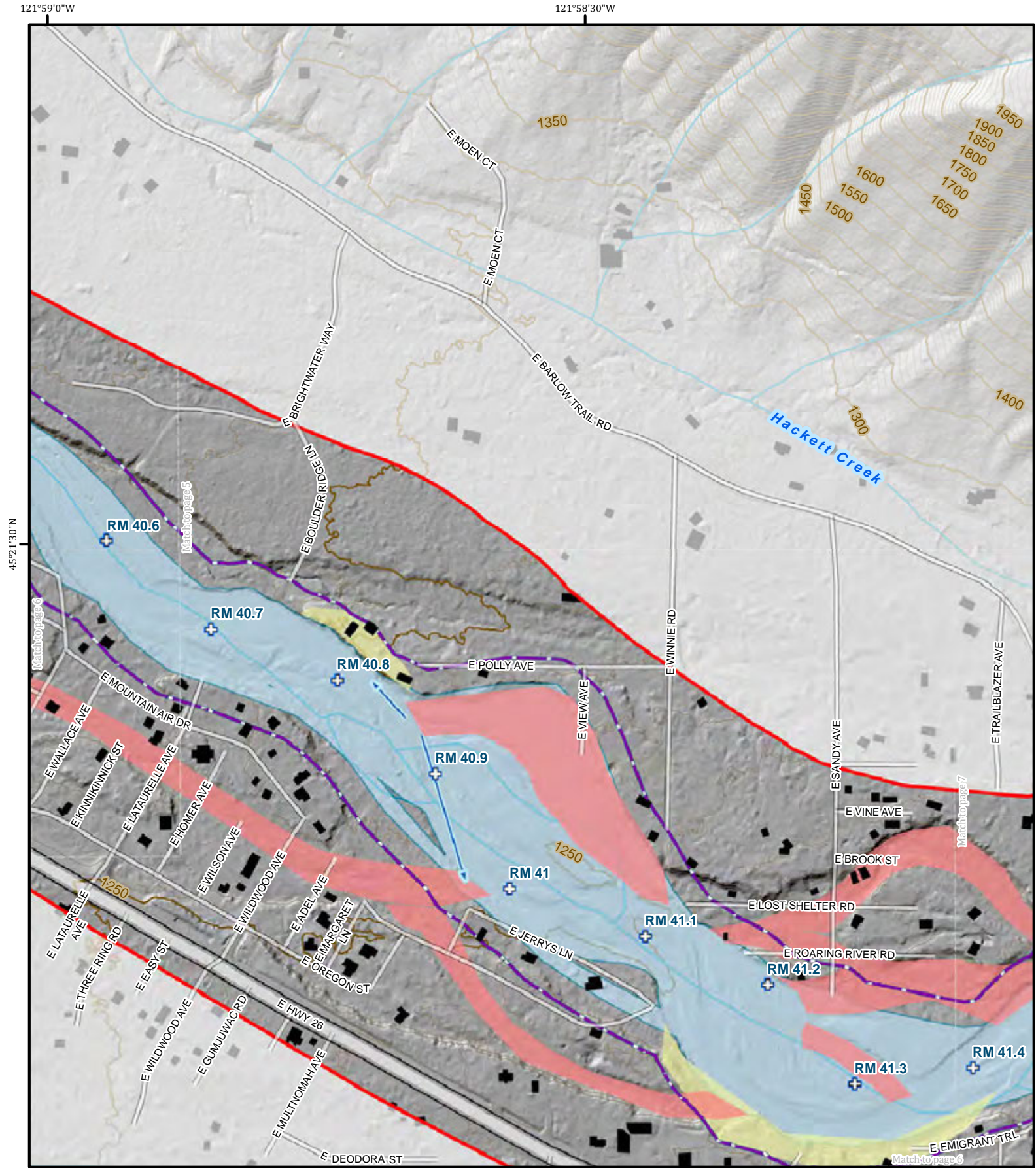


Upper Sandy River - Flood and Erosion Hazard Mitigation Evaluation Project

Hazard and Risk Management Mapbook

-  USGS River Miles
-  Streams (USGS NHD 2010)
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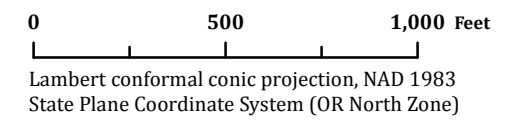


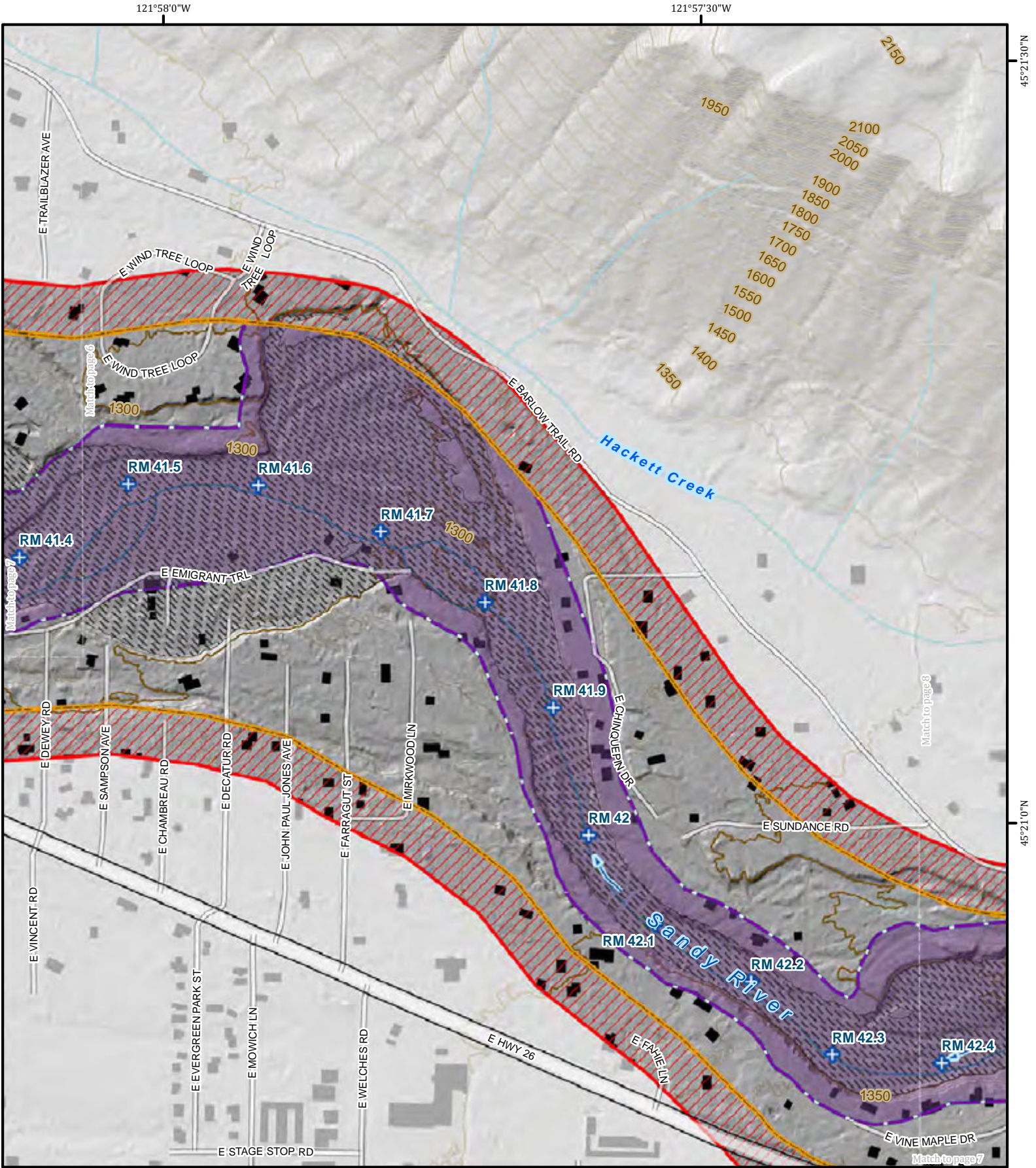
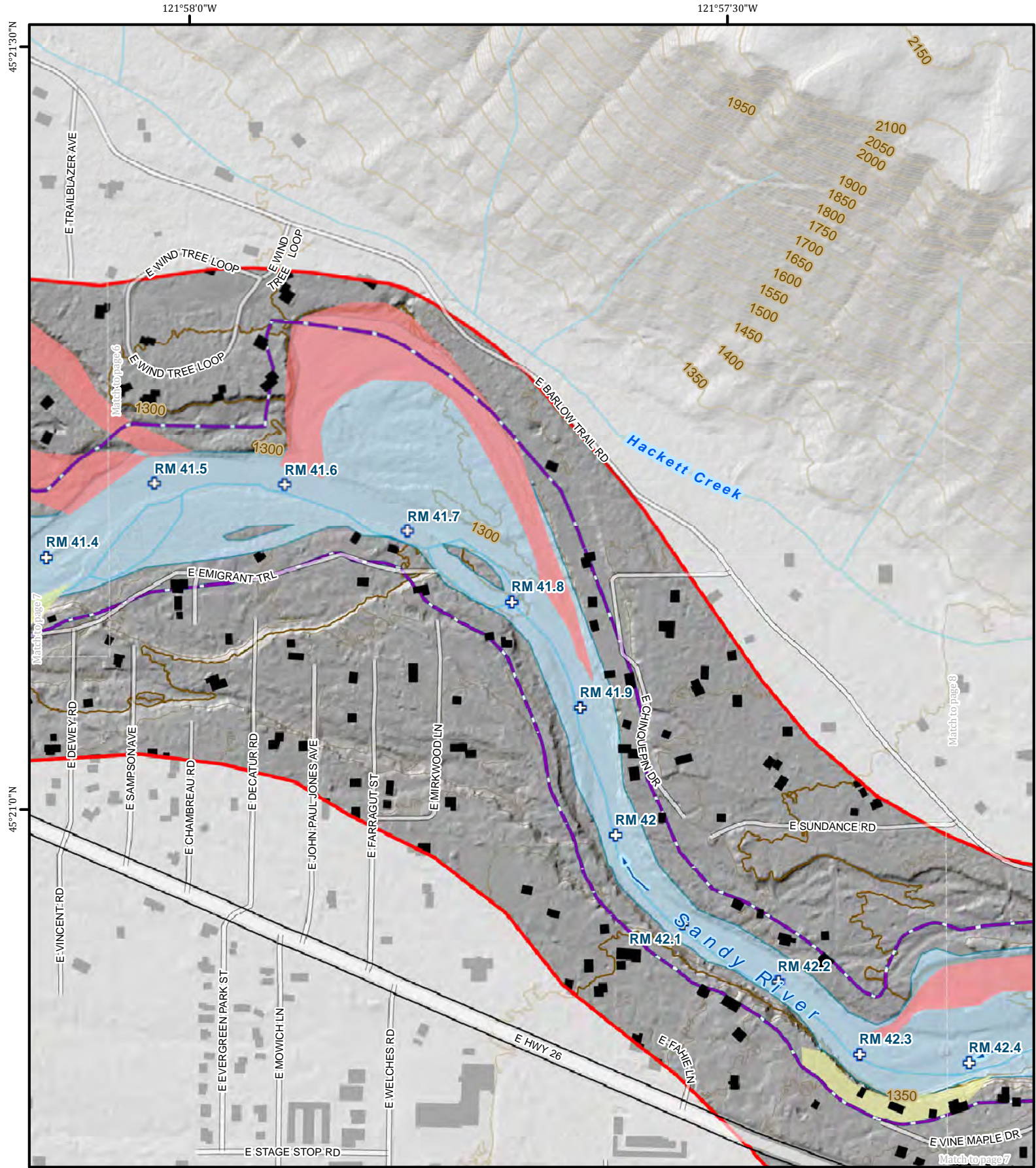


Upper Sandy River - Flood and Erosion Hazard Mitigation Evaluation Project

**Hazard and Risk Management Mapbook**

- |  |                         |  |                         |  |                             |
|--|-------------------------|--|-------------------------|--|-----------------------------|
|  | USGS River Miles        |  | HMZ + 100ft Buffer      |  | Minimum CMZ Management Zone |
|  | Streams (USGS NHD 2010) |  | HMZ                     |  | Area within 100 ft buffer   |
|  | Roads (Clackamas Co.)   |  | Actively Eroding Trends |  | FEMA 100 yr Flood Zone      |
|  | CMZ                     |  | AHZ                     |  |                             |
|  | EPAL                    |  |                         |  |                             |



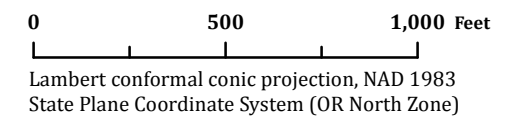


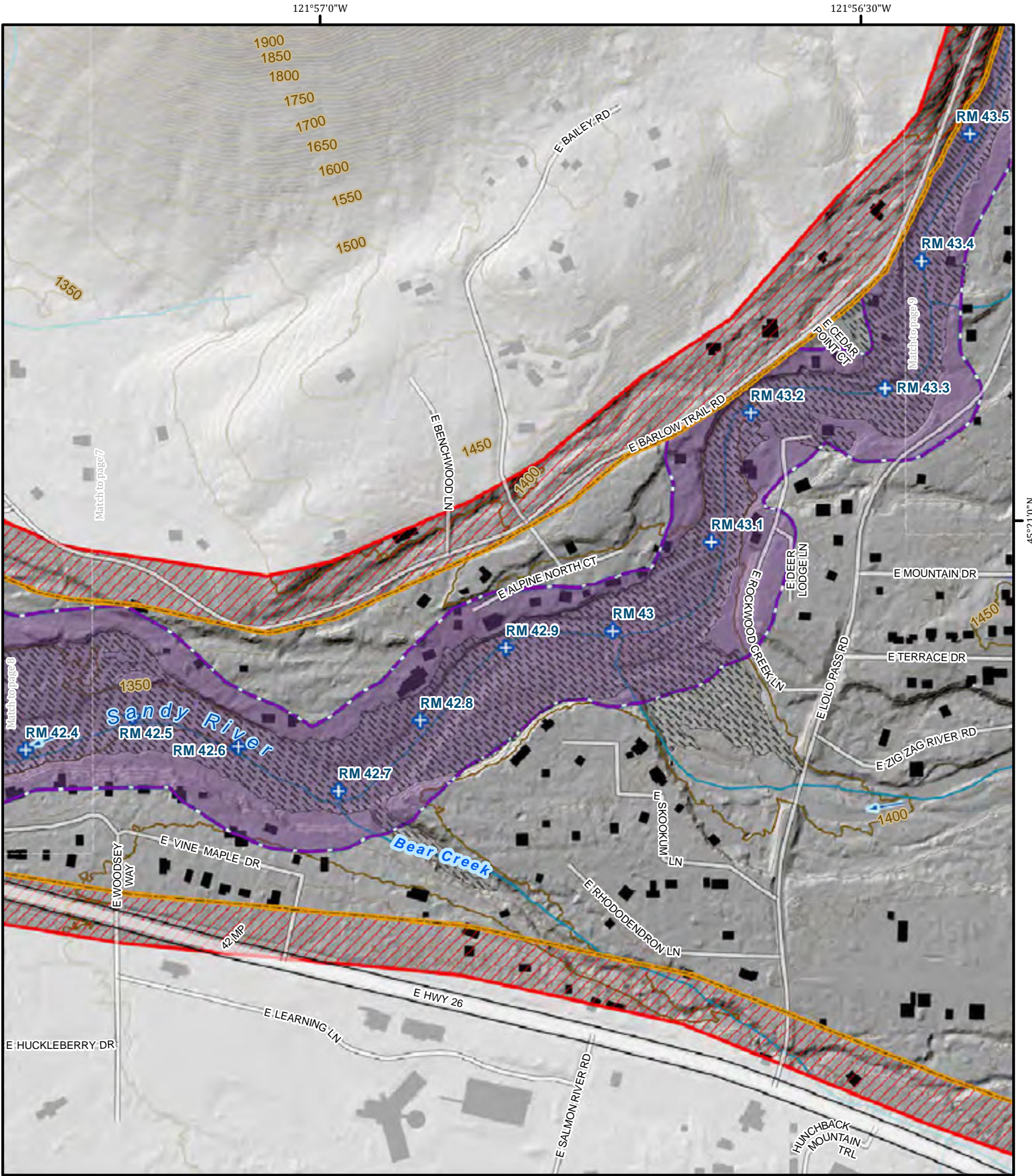
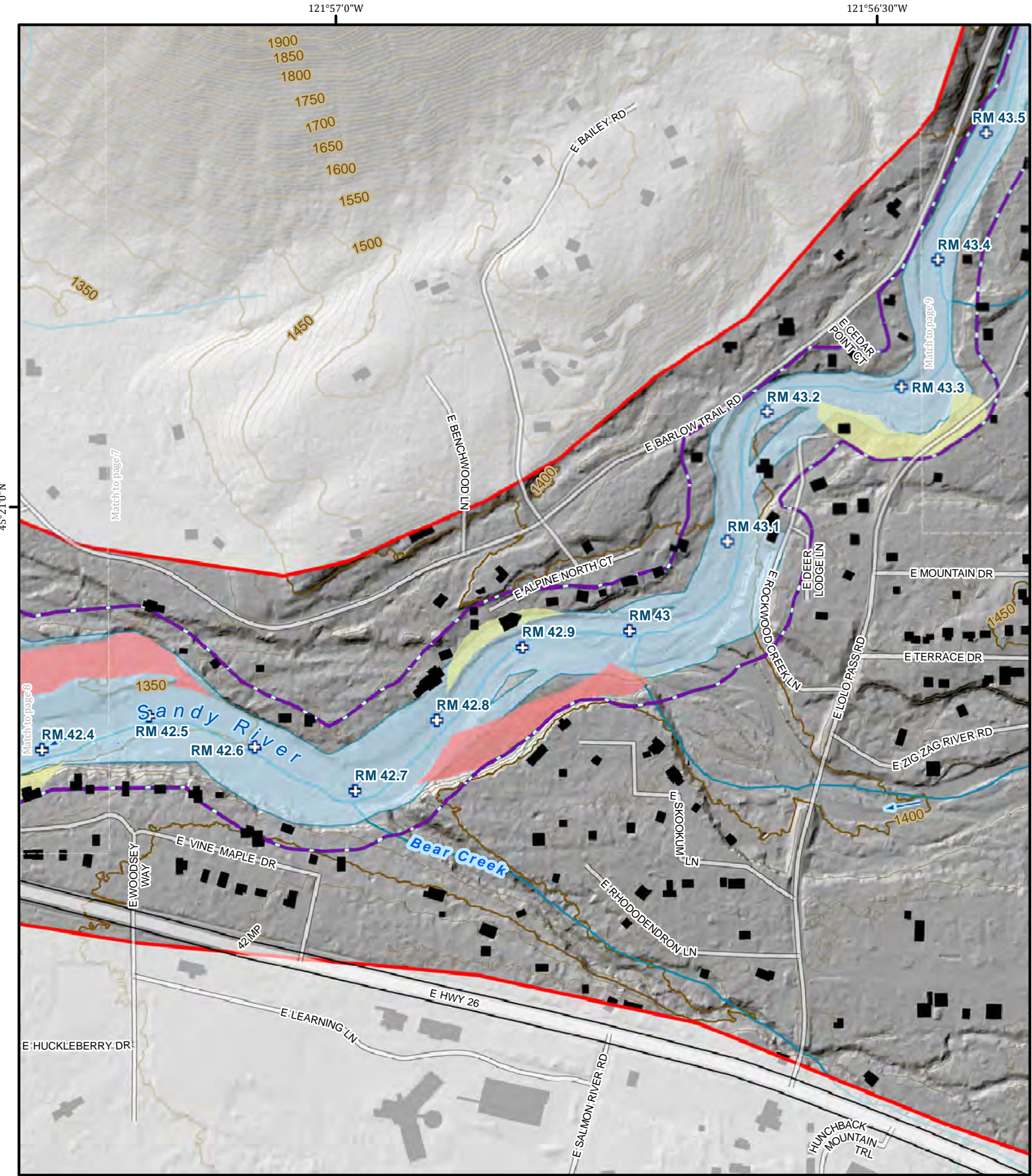
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**Hazard and Risk Management Mapbook**

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- USGS River Miles
- Streams (USGS NHD 2010)
- Roads (Clackamas Co.)
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Upper Sandy River - Flood and Erosion Hazard Mitigation Evaluation Project

**Hazard and Risk Management Mapbook**

- |  |                         |  |                         |  |                             |
|--|-------------------------|--|-------------------------|--|-----------------------------|
|  | USGS River Miles        |  | HMZ + 100ft Buffer      |  | Minimum CMZ Management Zone |
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|  | Roads (Clackamas Co.)   |  | Actively Eroding Trends |  | FEMA 100 yr Flood Zone      |
|  | CMZ                     |  | AHZ                     |  |                             |
|  | EPAL                    |  |                         |  |                             |

0 500 1,000 Feet

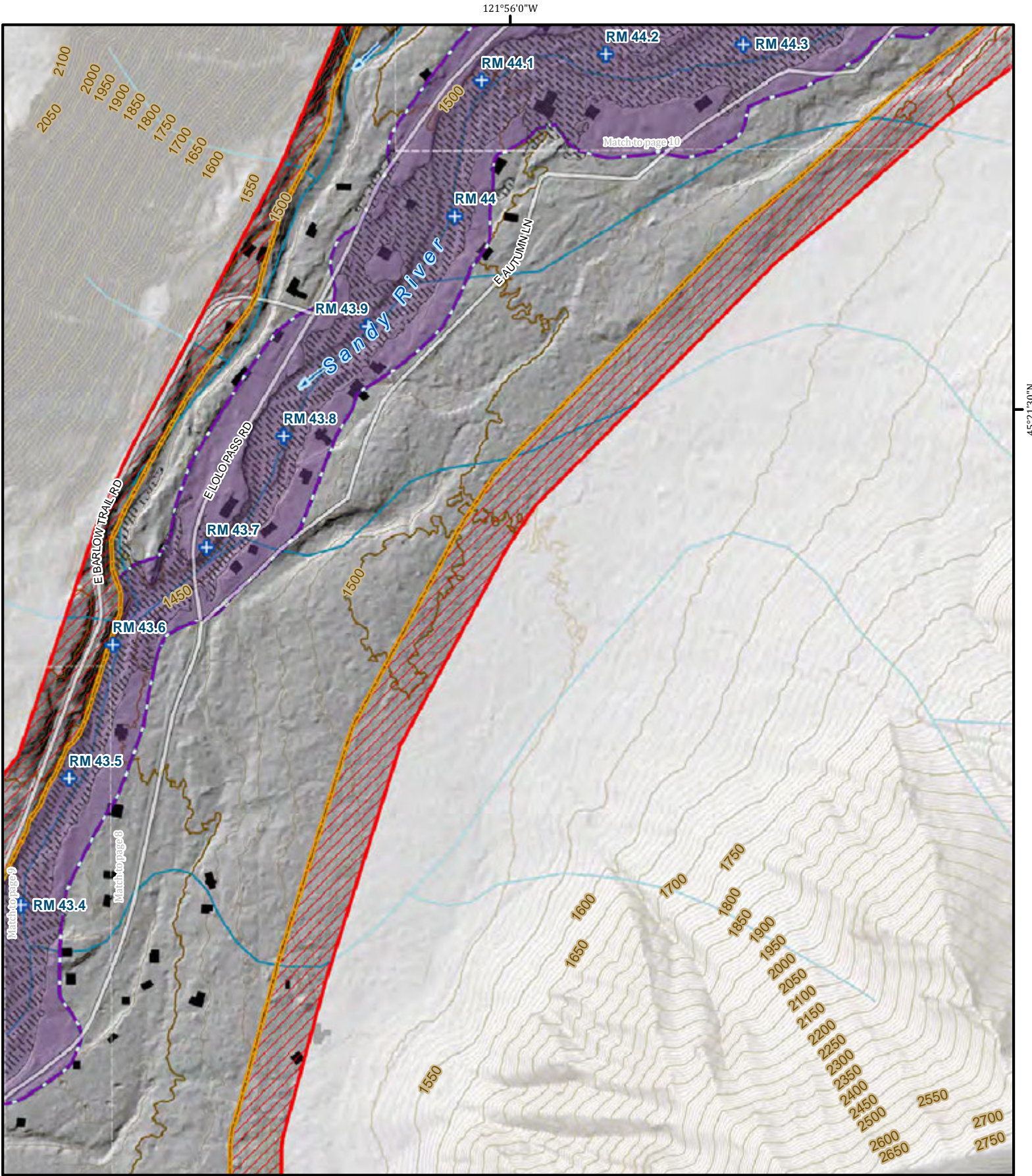
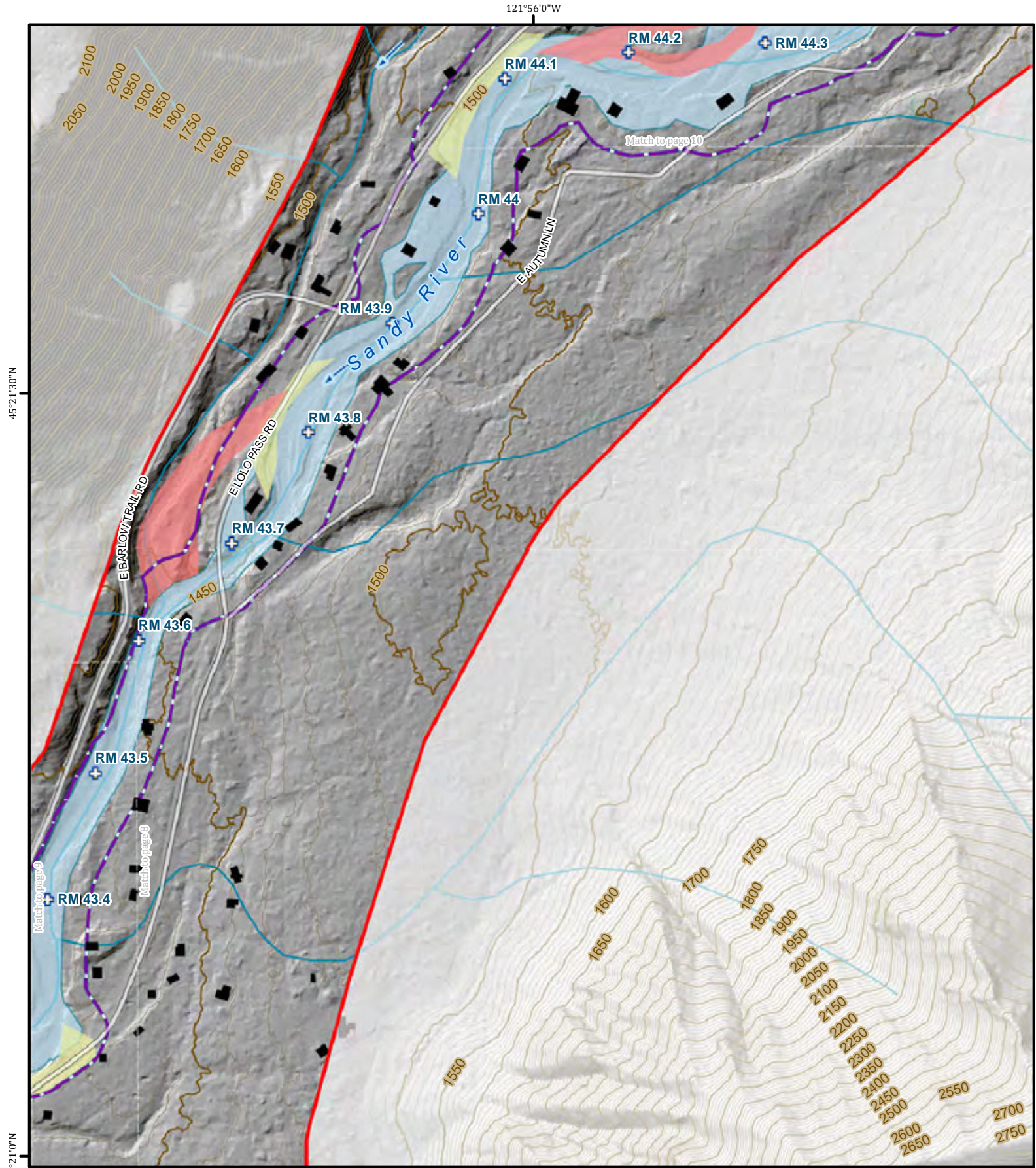
Lambert conformal conic projection, NAD 1983  
State Plane Coordinate System (OR North Zone)



Data sources: 2013 LiDAR DEM (DOGAMI), Clackamas County, USGS, NSD

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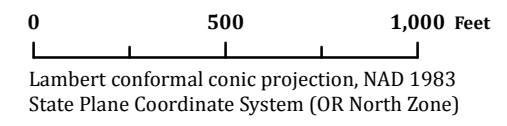




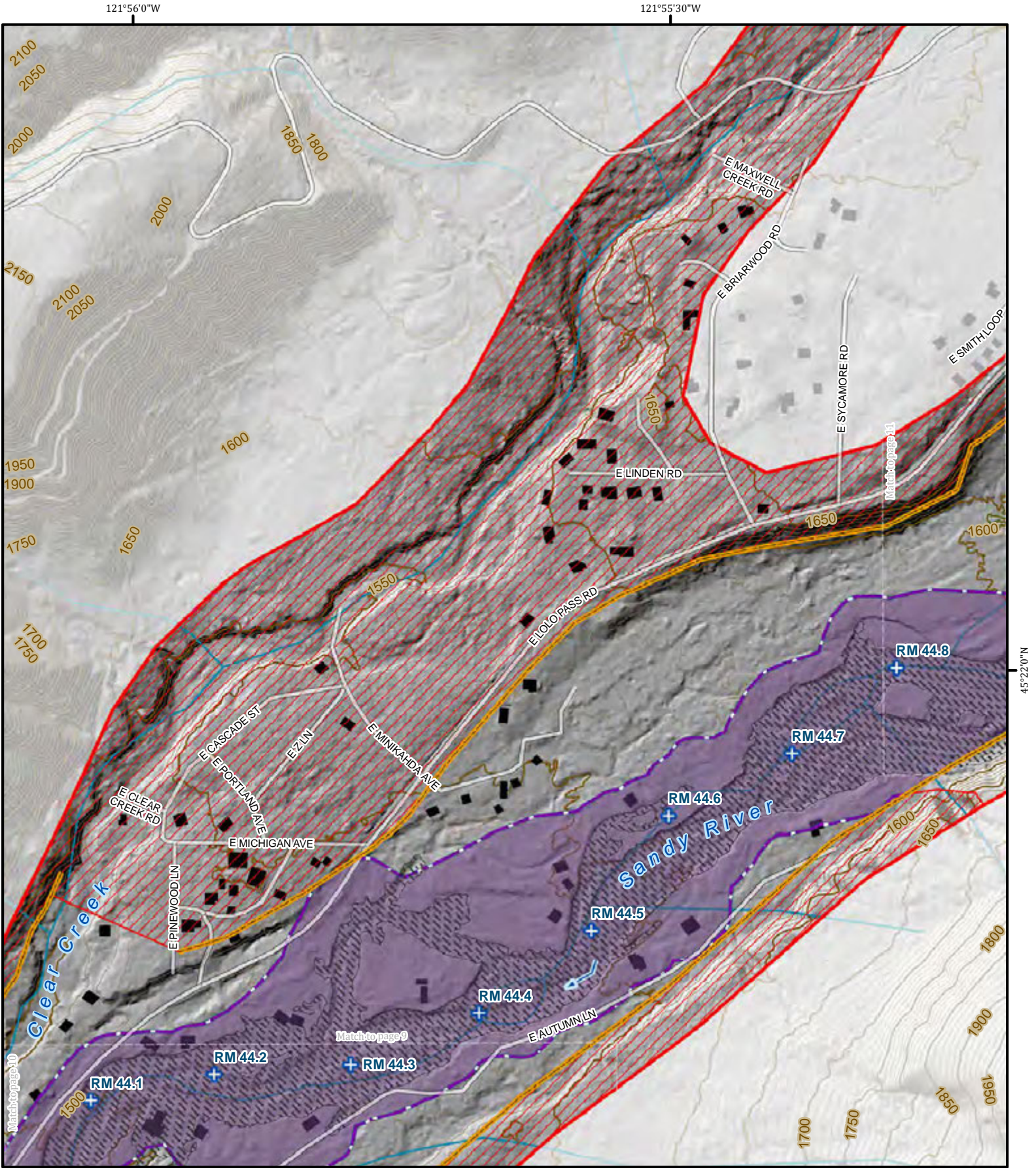
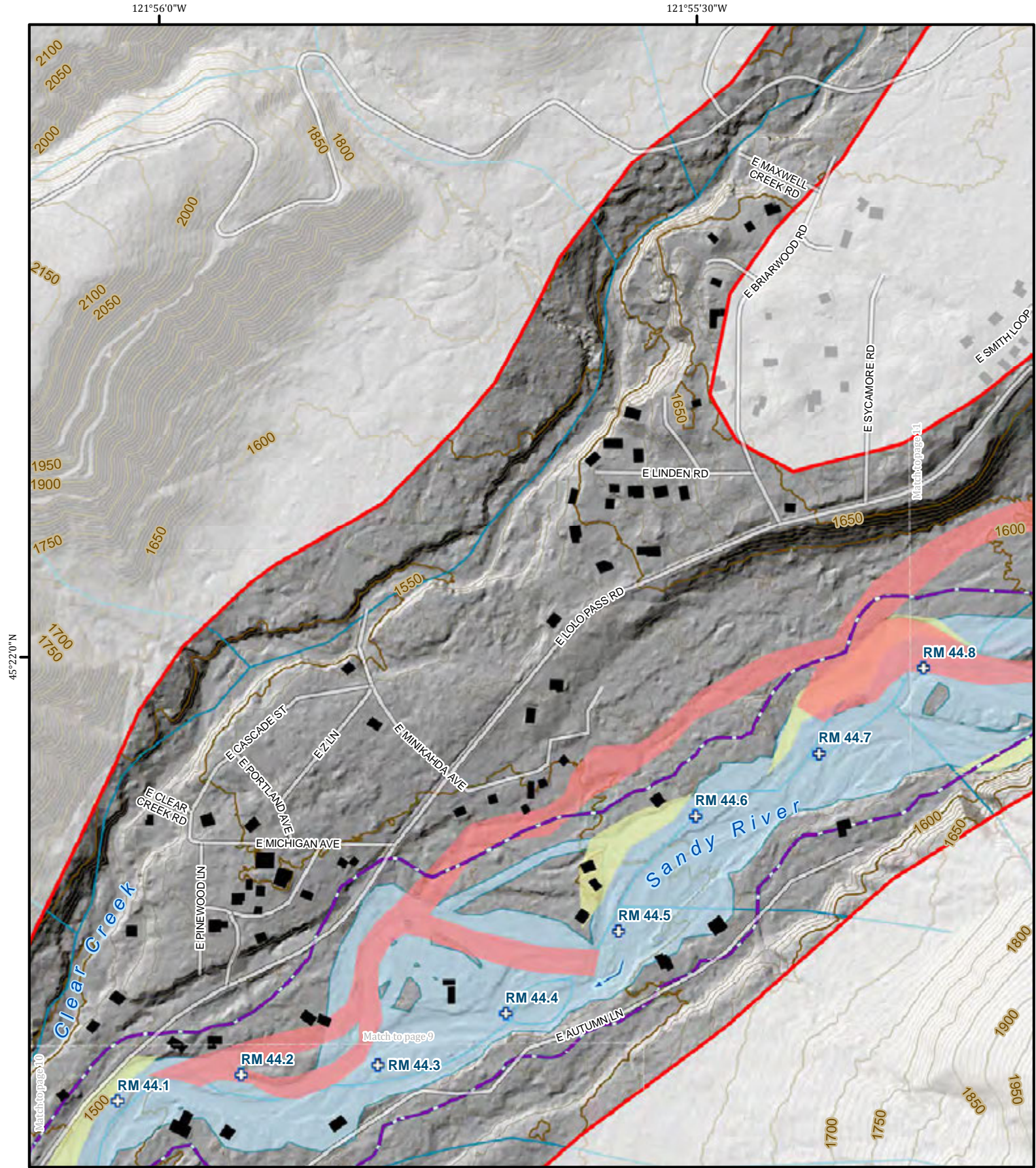
Upper Sandy River - Flood and Erosion Hazard Mitigation Evaluation Project

**Hazard and Risk Management Mapbook**

- |  |                         |  |                         |  |                             |
|--|-------------------------|--|-------------------------|--|-----------------------------|
|  | USGS River Miles        |  | HMZ + 100ft Buffer      |  | Minimum CMZ Management Zone |
|  | Streams (USGS NHD 2010) |  | HMZ                     |  | Area within 100 ft buffer   |
|  | Roads (Clackamas Co.)   |  | Actively Eroding Trends |  | FEMA 100 yr Flood Zone      |
|  | CMZ                     |  | AHZ                     |  |                             |
|  | EPAL                    |  |                         |  |                             |



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Upper Sandy River - Flood and Erosion Hazard Mitigation Evaluation Project

**Hazard and Risk Management Mapbook**

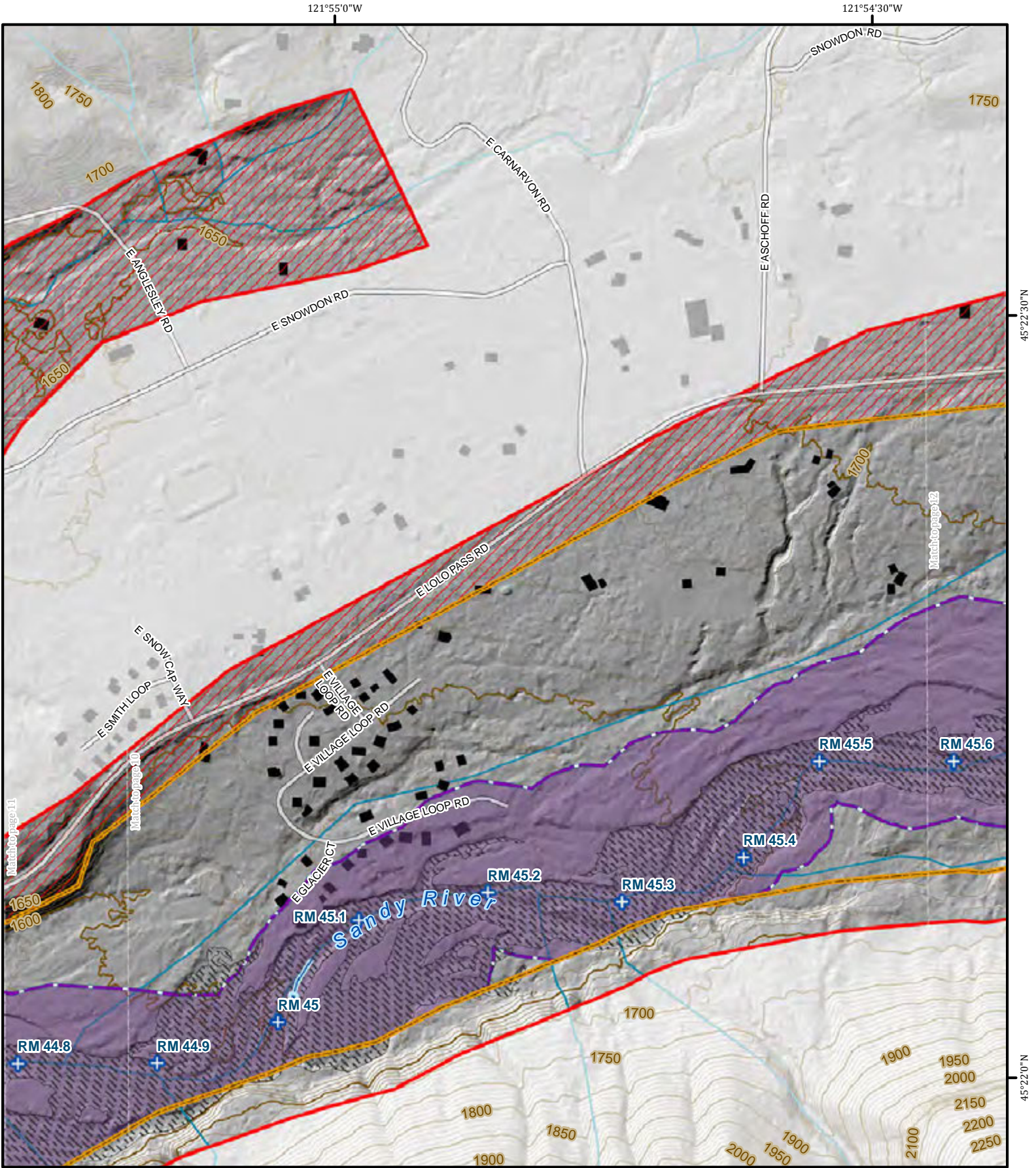
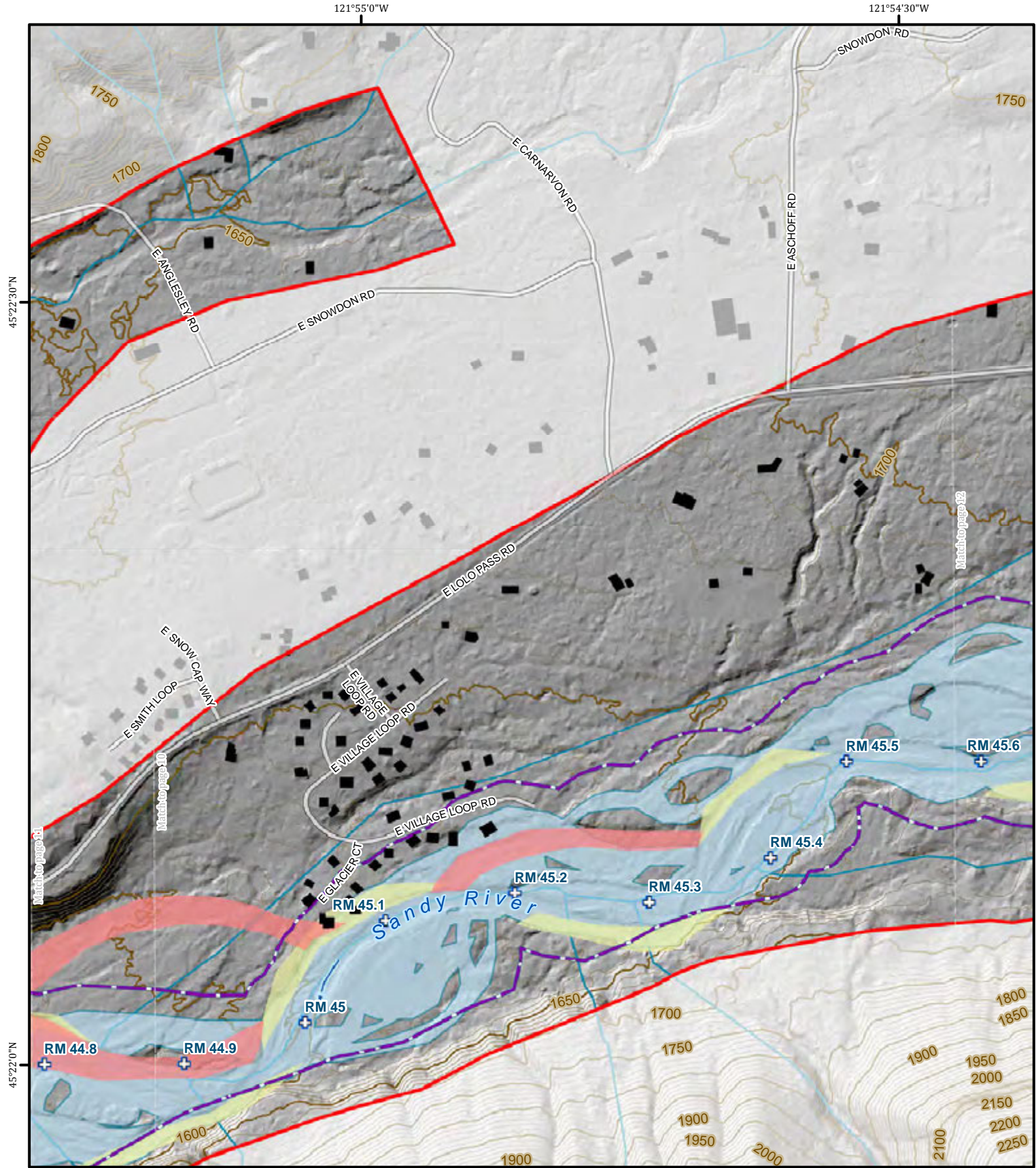
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0 500 1,000 Feet  
 Lambert conformal conic projection, NAD 1983  
 State Plane Coordinate System (OR North Zone)















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Upper Sandy River - Flood and Erosion Hazard Mitigation Evaluation Project

**Hazard and Risk Management Mapbook**

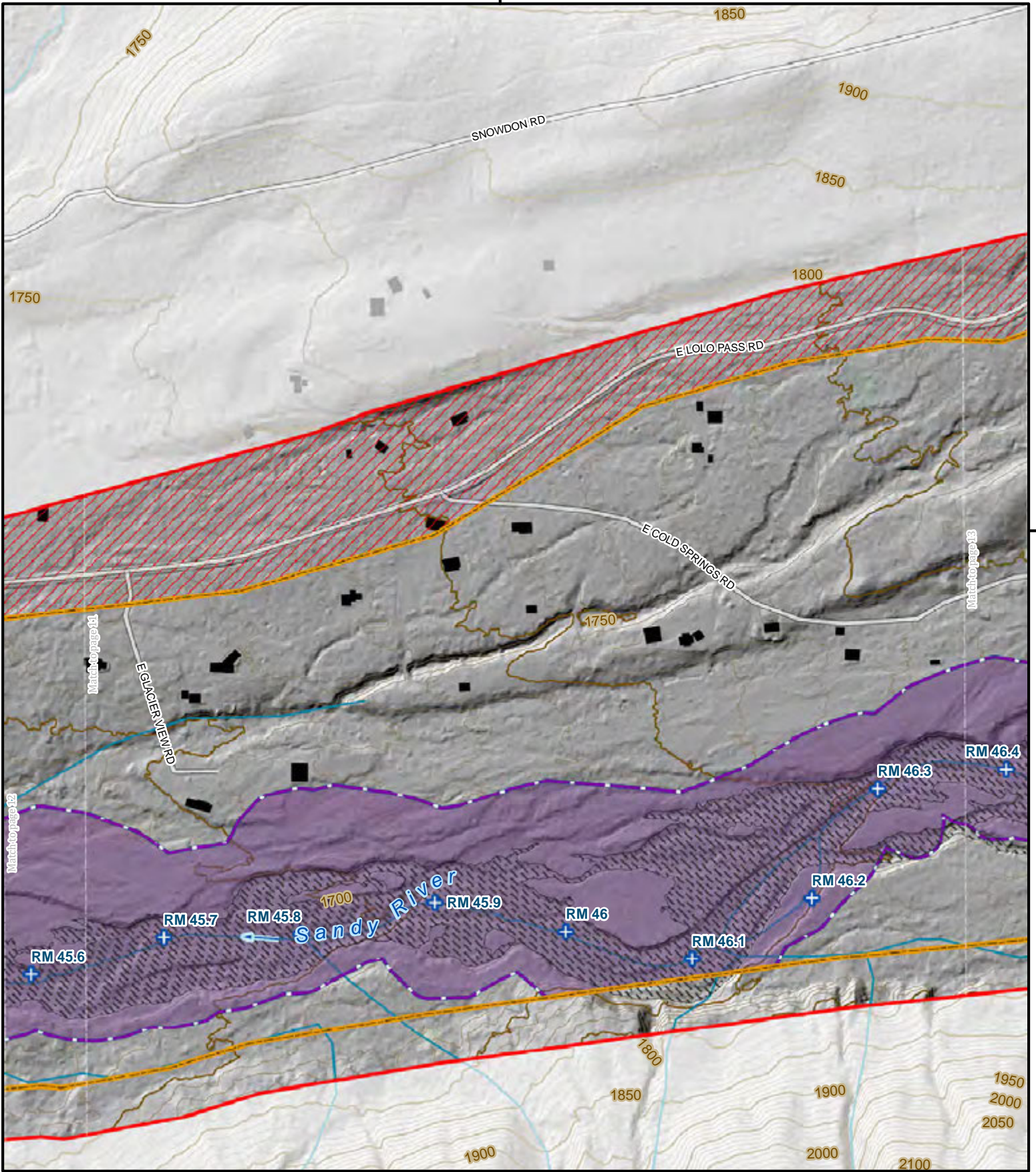
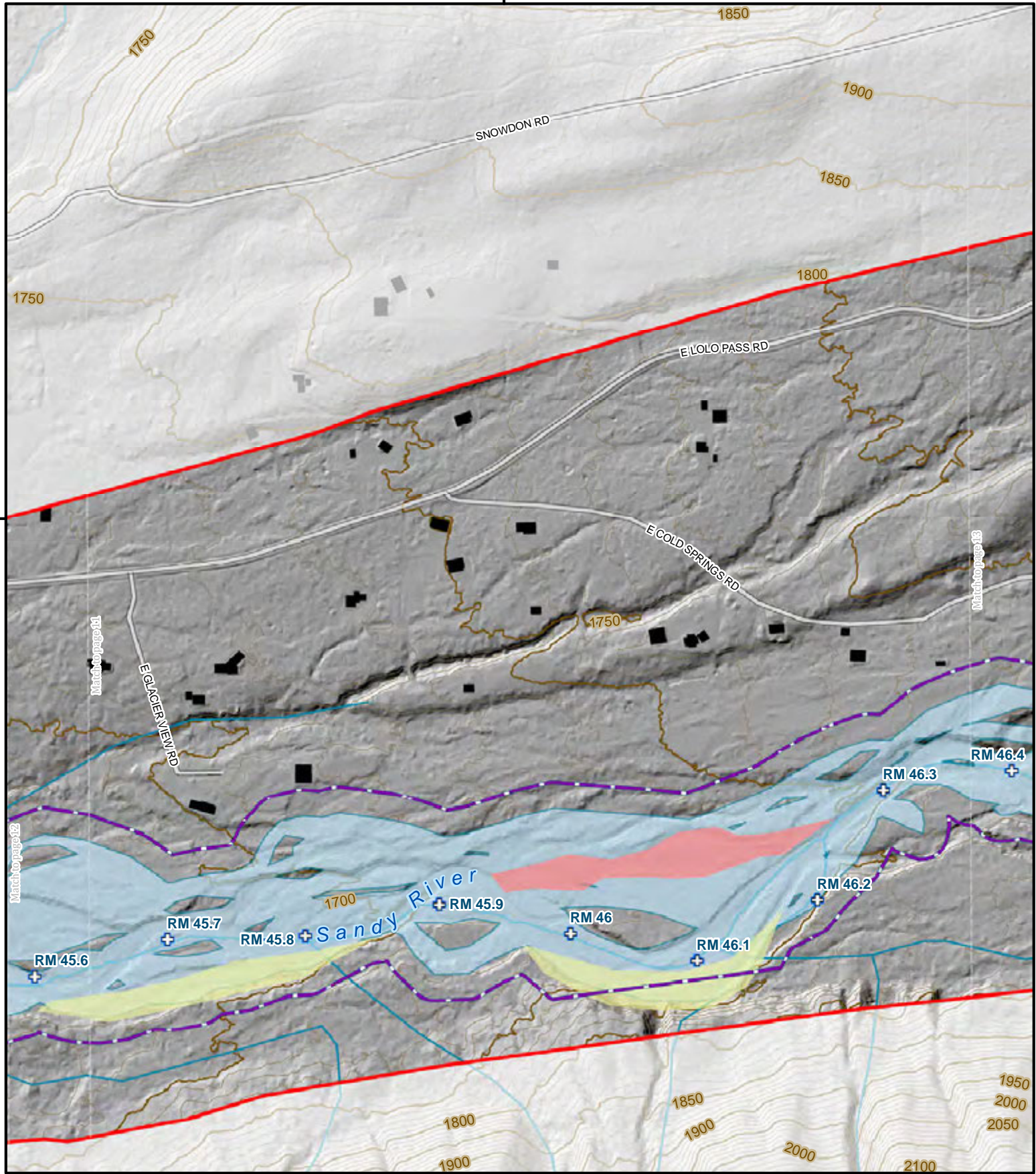
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




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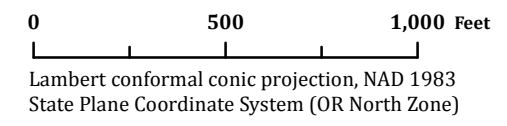
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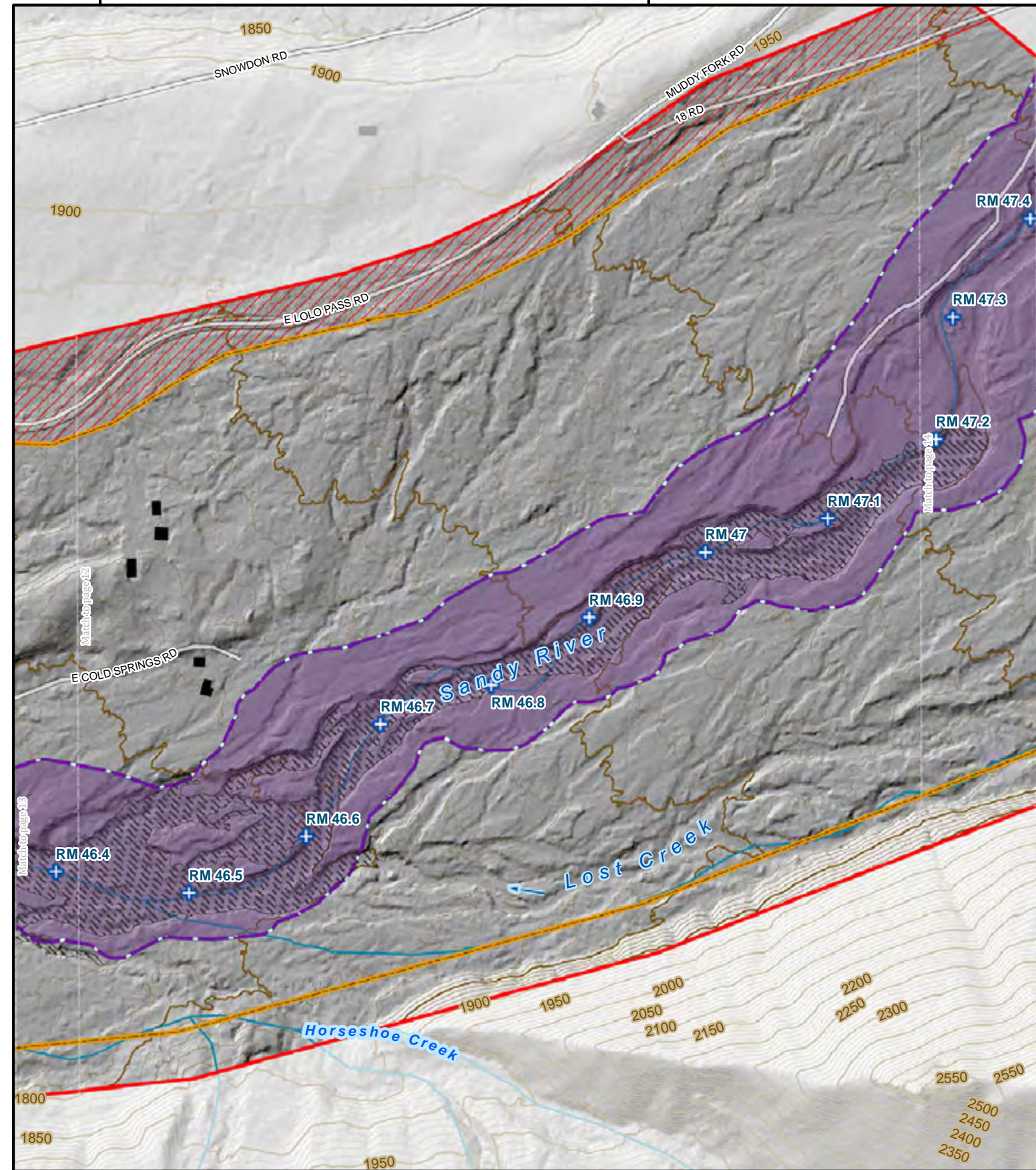
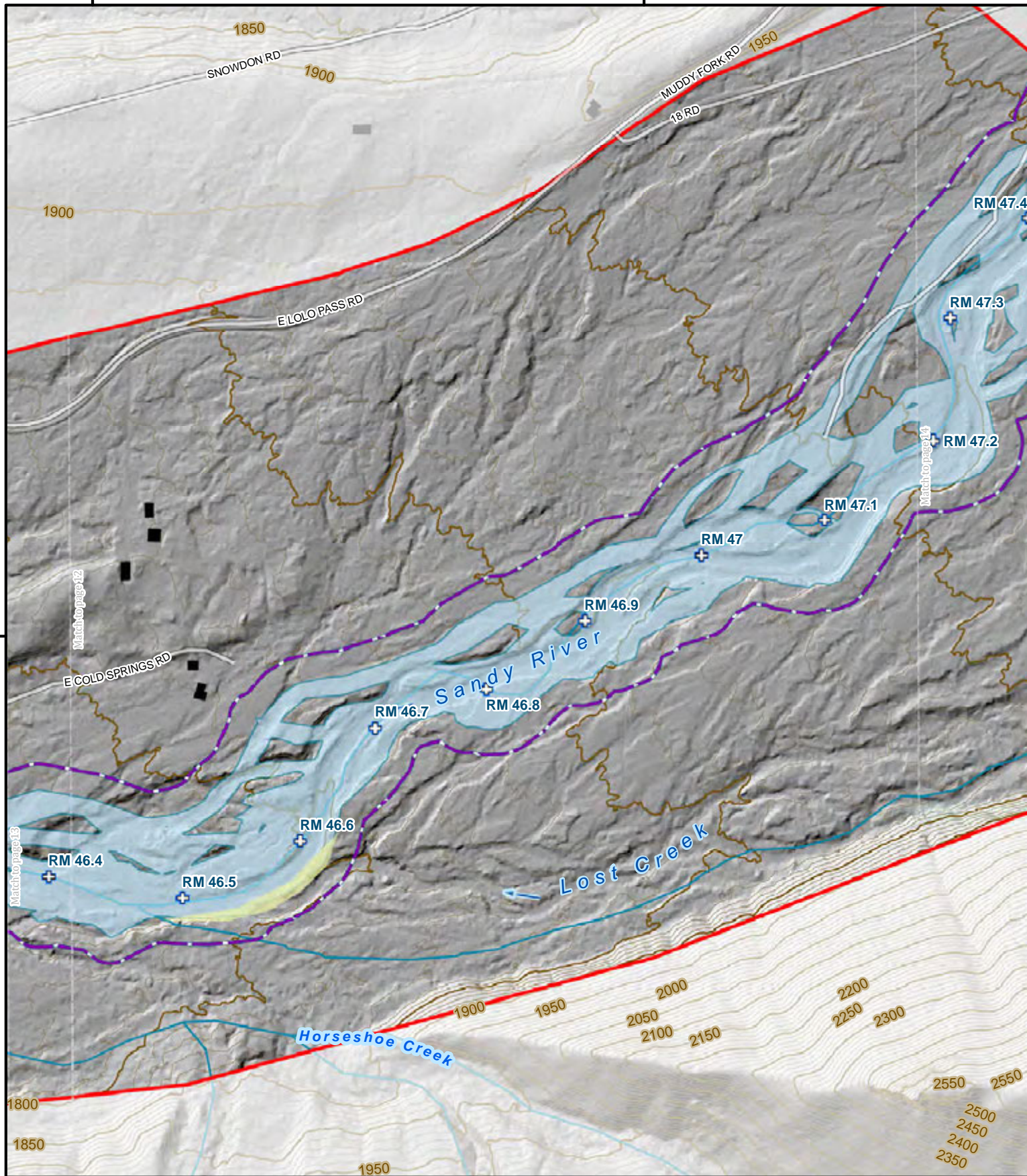


Upper Sandy River - Flood and Erosion Hazard Mitigation Evaluation Project

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




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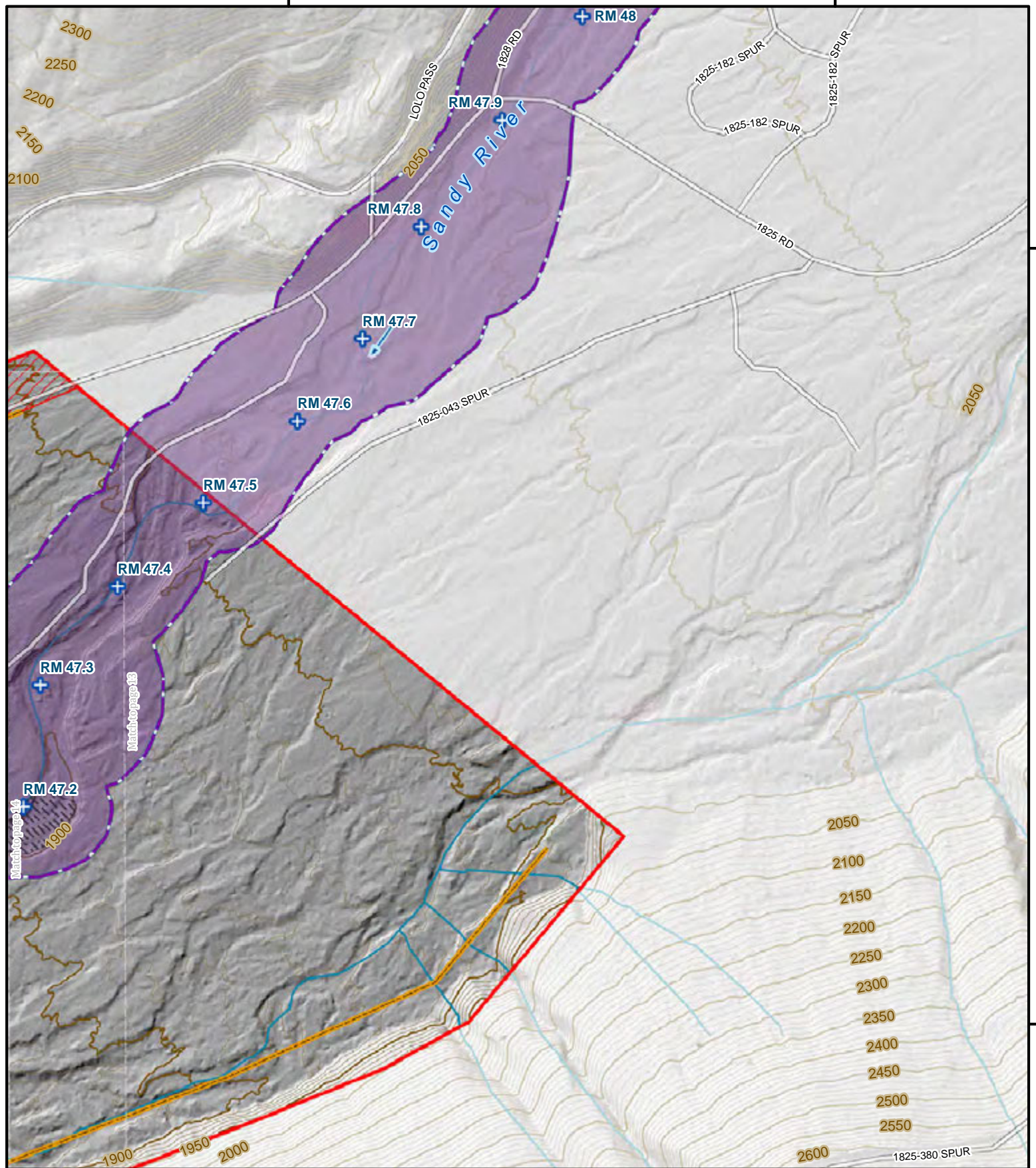
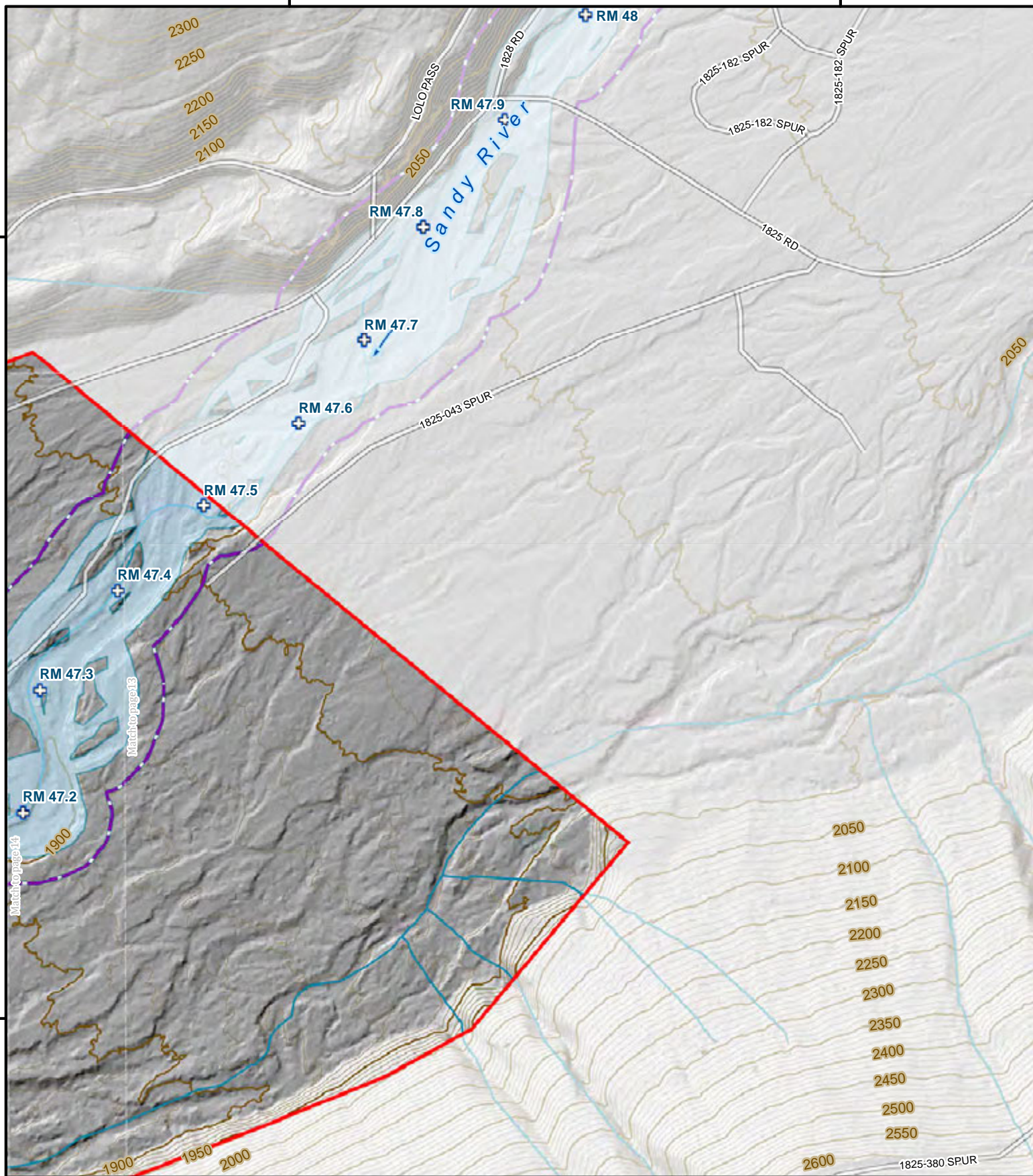
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








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