GLENROSE WATERSHED

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Glenrose Virtual Tour

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What is a watershed?

- A watershed is a geographic area that drains to a common point.
- Most of us think that a natural drainage system flows into a stream or creek.
- In the Glenrose Watershed, stormwater (in the form of rain or melting snow) runs off properties and down hillside drainageways that ultimately convey stormwater to the valley floor where it slowly infiltrates into the ground, never reaching the Spokane River as surface runoff.

Development of regional stormwater systems involve:

- examining the way nature handles runoff
- creating features such as ponds to mimic the natural system as much as possible

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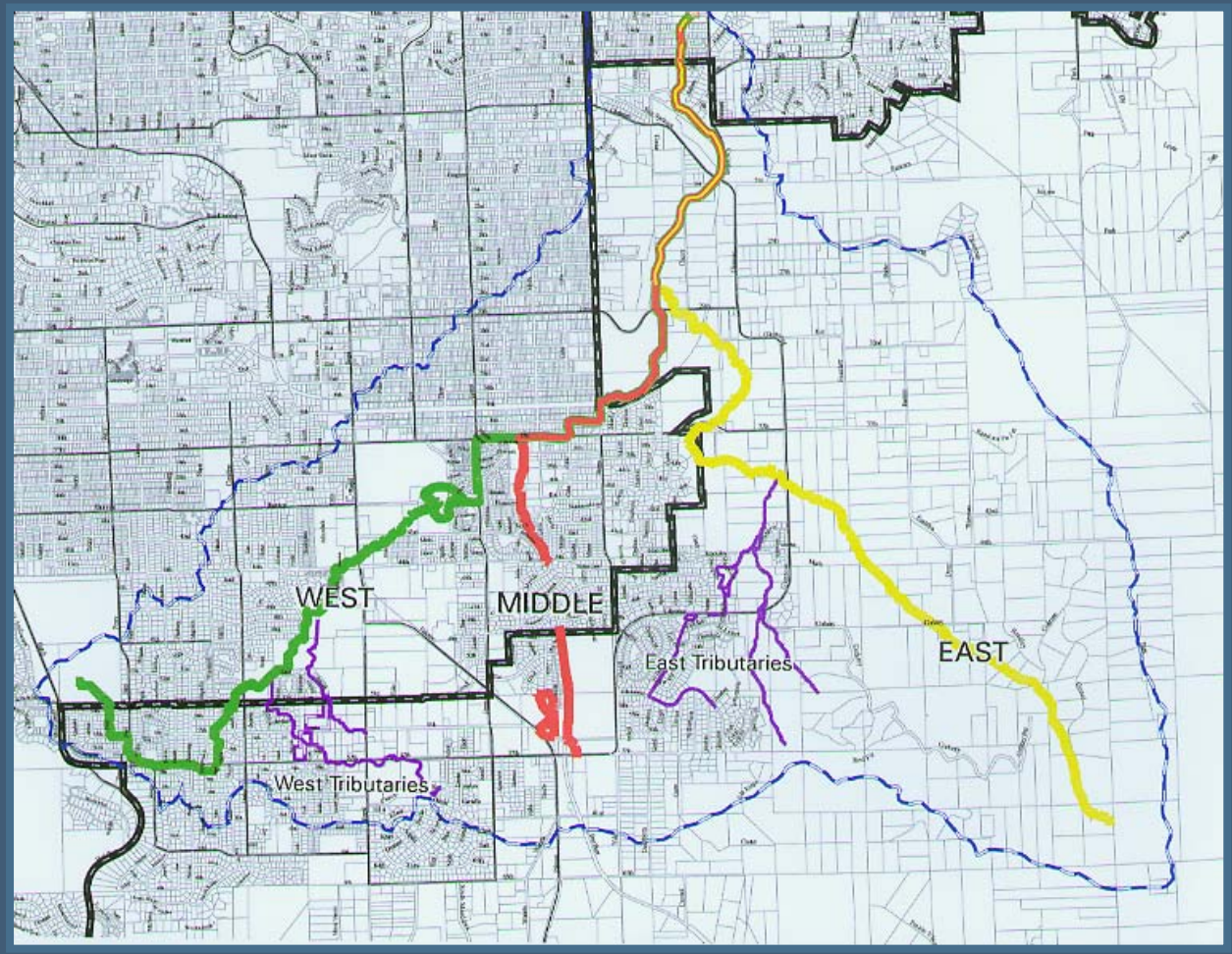

Drainage in the Glenrose Watershed flows from the southwest, middle and eastern areas of the watershed to the north. These three drainage systems eventually merge near Havana and Cherry Lane, north of 29th Avenue. The flow pattern continues north toward the 8th Street and Carnahan area.

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The “West” Glenrose Drainageway

The “west” drainageway begins near Hatch Road and 57th Avenue and flows to the northeast. It flows along 57th and through residential neighborhoods.

Stormwater runoff from the Regal Road and 57th Ave area enters this drainageway.

Historically, the flow path continued through the 57th pond vicinity, through the Spokane Youth Sports Association ball-fields, through Hazel’s Creek, and joined the “middle” drainageway.

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The west drainageway collects stormwater from as far east as 57th Avenue just west of the Palouse Highway. Several years ago, as the County widened 57th, a storm sewer was constructed in the roadway to handle drainage from the road improvements, some side roads and a few residential neighborhoods.

A number of private properties around Palouse and 57th have flooding problems caused by rapid stormwater runoff, high groundwater and impermeable soils.

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Some facilities do not function properly or are difficult to maintain, causing localized roadway and property flooding and flooded basements / crawlspaces.

Top: A drywell grate that should be draining water, is surcharging water into the roadway.

At left: Stormwater facilities that can not handle the runoff often impact neighbors or adjacent roadways.

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Home-building has encroached on this drainageway. The owner may not have recognized the importance of this natural drainage system when obstructing the flow.

Even small natural drainageways are important for conveying local runoff toward larger drainageways and may provide some natural pollutant removal.

This drainageway is in a residential subdivision common area. It blends naturally into the backyards of adjacent homes, enhancing their property and increasing the potential for wildlife habitat.

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Stormwater from the widened 57th Avenue is conveyed to County-owned evaporation ponds at 57th and 55th, west of Regal. The ponds are lined and are interconnected. The only way water leaves the shallow ponds is through evaporation. Groundwater and bedrock are very high in this area.

Installation of pond liner at 55th evaporation pond.

The connected evaporation ponds look full, but are still below capacity in this photo.

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For commercial and residential developments, handling stormwater on-site can take a lot of land, particularly if the facility relies exclusively on evaporation for disposal and has a high percentage of impervious parking lot and building / roof area.

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With proper engineering, design and construction, stormwater treatment and storage can become a site amenity, even in a commercial or multi-family residential setting.

However, continual maintenance and management of complex systems is necessary if stormwater facilities are to function properly.

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The City of Spokane is developing the Hazel's Creek Project to maintain wetlands and manage stormwater.

The County evaporation ponds, near the top of this watershed have no outlet. Currently, runoff from properties and roads beyond (north of) the 57th pond system does continue to flow overland and through the streets and gutters toward Hazel's Creek.

Willows at the Hazel's Creek site.

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In some locations the natural drainage paths downstream of Hazel's Creek still wind through the developed neighborhoods. In other places, the natural drainageways have been moved, encroached upon or filled in.

The west and middle drainageways join at 37th between Rebecca and Myrtle, then flow through the 100 year floodplain near 37th and Havana, and then under 29th Avenue at the base of "Monkey Tail Hill" (the area at the top of the steep curve on 29th).

The combined "west" and "middle" drainageways then join the "east" drainageway just beyond the County owned floodplain property immediately north of 29th.

Wetlands at the top of Monkey Tail Hill.

County property north of 29th.

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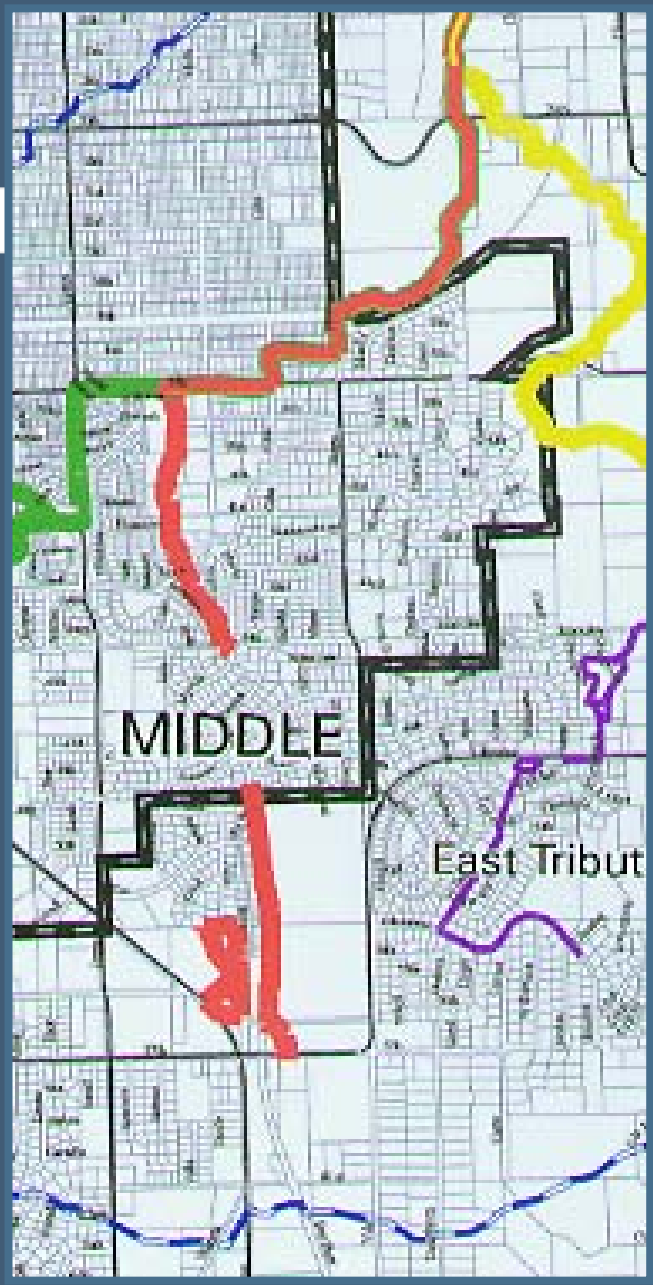
The “Middle” Glenrose Drainageway

The “middle” drainageway begins south of Yale Road and 57th Avenue, follows 57th via a ditch, goes through culverts under 57th and traverses the Ben Burr right-of-way. Historically, the runoff flowed through what is now the City’s Windsong development, then through Greystone Estates and joined up with the “west” drainageway (shown in green) near 37th between Rebecca and Myrtle.



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The middle drainageway takes runoff from the portion of Browne Mountain that drains into the Yale Road and 57th Avenue area.

Springs in this area lead to serious ice hazards in streets and driveways in winter. In much of the summer, a constant flow runs down the gutter.

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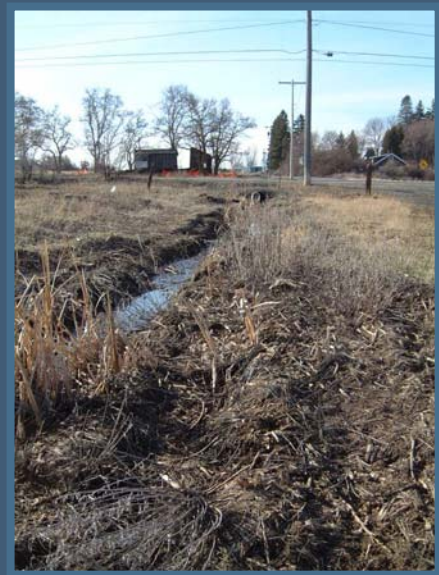
Runoff flows north through culverts under 57th Avenue to property owned by the County bounded by the Ben Burr right-of-way, 57th Ave, Hilby Station Apts and the Palouse Plaza development.

Top: Standing water near the Ben Burr ROW.

Bottom: Stormwater flowing along west side of the Ben Burr ROW from 57th culverts.



Surface and groundwater conditions, coupled with shallow bedrock, contribute to nearly year-round wetland vegetation in this area. The County is designing a pedestrian pathway atop the old Ben Burr railroad bed extending from 57th to the Windsong development. The low lying property will be converted into constructed wetlands.

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Wet ground surfaces during construction are common and stormwater facilities are often at-capacity. The County proposed constructed wetlands may help alleviate impacts due to excessive groundwater and surface water.

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The drainage through this area currently flows adjacent to the Ben Burr ROW and across farmland, then northward in a storm sewer through the Windsong development in the City, winding its way through the Greystone Estates subdivision and potentially (during much larger storm events) enters the 100 year floodplain northeast of Havana and 37th.

Stormwater along the Ben Burr right-of-way.

Stormwater leaves the Ben Burr right-of-way and enters the Windsong pond at this corner.

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The “East” Glenrose Drainageway

The “east” drainageway begins near the top of the east side of Browne Mountain and flows past the Morning Star Boys’ Ranch, under Glenrose just south of 37th, travels through undeveloped fields and meadows, and under 29th via culverts west of Cherry Lane.

The “east” drainageway merges with the combined “west” and “middle” drainages north of 29th. This flow path continues to the 8th and Carnahan area.

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**What happened to Browne's Mountain? Most people refer to the area as Browne's Mountain, but old maps generally call it Browne Mountain. Thus, we've opted to use the name that appears to be most official.*

Some of the best views of the Glenrose Watershed are from Browne* Mountain. This shot looks west from the mountain with 57th Avenue just visible over the roof of the closest house.

Drainage from the west side of the mountain used to drain westward. Since the 1930s or so, much of the runoff has drained to the north.

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As the upper portions of the north and west slopes of Browne Mountain developed, erosion became a major problem during thunderstorms or when heavy snows melted. The problems have lessened as lots have been landscaped and vegetation established.

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Someone moving into a home on a mountain rarely thinks about having a flooding problem. The flanks of Browne Mountain, however, are dotted with springs – areas where the groundwater surfaces. Some of the springs occur in old drainage paths that have been filled in.

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Some springs surface in basements or crawl spaces, others in driveways or streets. In winter the water freezes, causing problems for those traversing the neighborhood by foot or car. In summer algae grows in the springs and attract insects.

At right: A landowner has corralled this spring at the top of Glennaire Drive in a pond.

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A few years ago a storm sewer pipe system was constructed in the upper reaches of Glennaire Drive to help alleviate flooding problems by safely routing the runoff to constructed stormwater facilities.

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Streets in areas with high groundwater often buckle and crack due to freezing, thawing and uneven settling.

A groundwater drain system was installed along the Glennaire storm sewer line to reduce future pavement problems. Once the pipe system was installed, the streets were re-paved.

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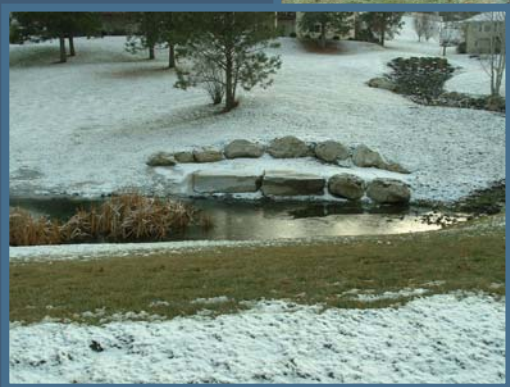
The recently constructed storm sewer on Browne Mountain follows Glennaire Drive and then turns north on Dearborn. From there it traverses the common area in the Inverness subdivision where it daylights onto and through a rock feature that dissipates energy and calms the erosive nature of the stormwater as it exits the pipe. From here, flow enters a small pond and is piped along the south side of Glenrose Road. The pipe turns northward under Glenrose Road and eventually reaches the site that used to contain the City sewage lagoons.



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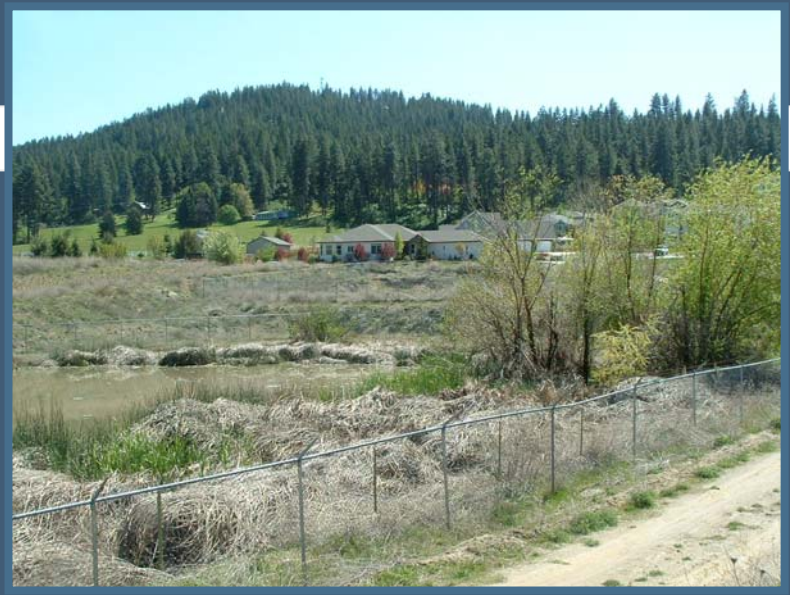

For many years the City of Spokane operated sanitary sewage lagoons on property north of Glenrose Road, near the intersection of 46th Avenue and Sumac. The lagoons were no longer needed when the City constructed a sewer trunk line in the area a few years ago.

The property was cleaned up and through an interlocal agreement, given to the County for use as a stormwater facility.

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To convey stormwater flows as close as possible to the natural path, the County constructed a better defined drainage channel. The channel is wide, shallow and grass-lined.

Looking north toward Glenrose drainage channel as it leaves the former sanitary sewer lagoon site.

Geotextile fabric was placed on the channel bottom.

The County obtained easements and property along the natural drainage channel downstream of the lagoon property.

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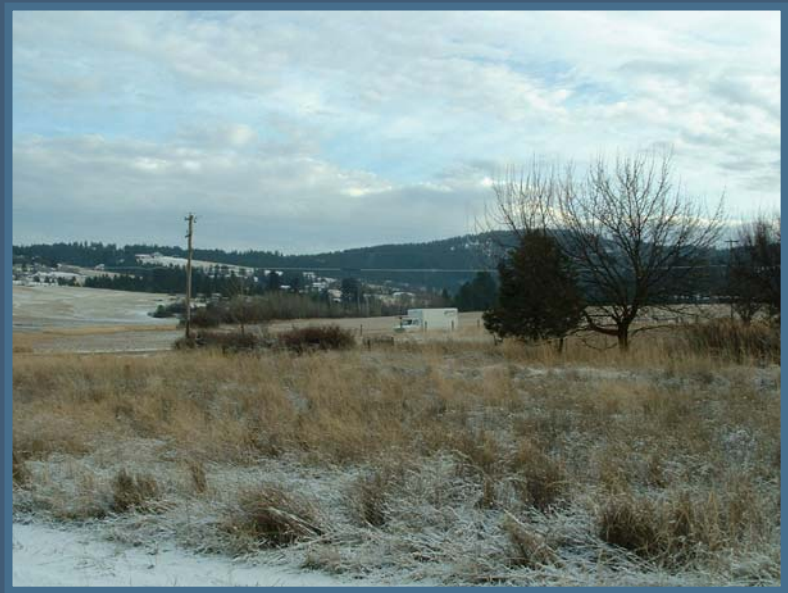
Drainage from the channel flows into a perennial / intermittent stream that comes from the eastern part of the watershed near the Morning Star Boys' Ranch .

Looking southwest toward drainage area that contributes runoff to east drainageway.



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Just north of 29th, the west and middle drainageways that come from the 57th & Hatch area and the Ben Burr Road area, merge with the major drainageway from the east that starts atop Browne Mountain.

In the late 50s, 29th near Cherry Lane was overtopped as the snow melted.

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Ultimately, the natural path of stormwater runoff during high flow conditions is to the north, through new development inside the City of Spokane Valley.

In the vicinity of 12th and Carnahan.

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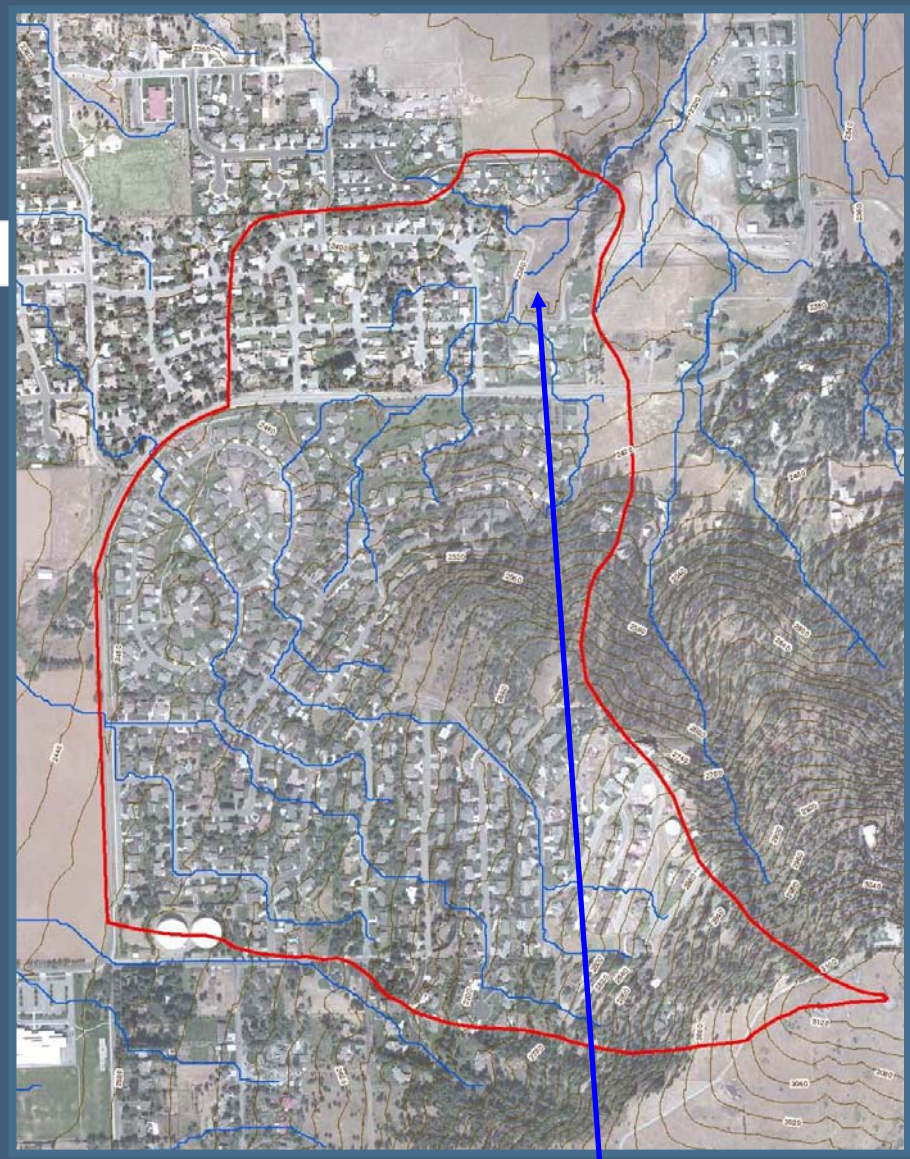
The Browne Mountain Regional Facility Project Site

A major regional stormwater facility in the Glenrose Watershed has recently reached the final design stage, with a construction contract scheduled to be awarded in mid-July 2007. It will be located at the former City of Spokane sewage lagoon site near 46th Ave and Chronicle Lane.

This site receives runoff from a sub-basin that includes the northwest slopes of Browne Mountain, the Glennaire and Inverness sub-divisions, the area surrounding the site and minor runoff from the Echo Glen residential area.



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Continuing to put the watershed pieces together into a regional stormwater system will involve a lot of input and ideas from residents and landowners in the area.

Please send your ideas or questions about future projects within the Glenrose Watershed to the Project Engineer/Manager:

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509-477-7241
clittle@spokanecounty.org

Visit our website:

www.spokanecounty.org/engineer/swutility.asp