Human Elevated Floodplain (IR_{HEF}) Vs. Abandoned Floodplain (IR_{RAF})

When fill or encroachments such as railroads, roads, berms, levees, and improved paths cause **the incision of the reach to be increased** there is a need to look at the incision ratio caused by the encroachment (IR_{HEF}) for the RGA; as compared to the incision ratio calculated with the floodplain in front of/behind the encroachment (IR_{RAF}).

Human elevated incision ratios should be calculated for <u>all</u> encroachments (berms, roads, railroads, and improved paths) where the encroachment is not considered to be the new valley wall and is blocking access to the floodplain or recently abandoned floodplain (RAF).

Take a moment to look at the encroachment situations below.

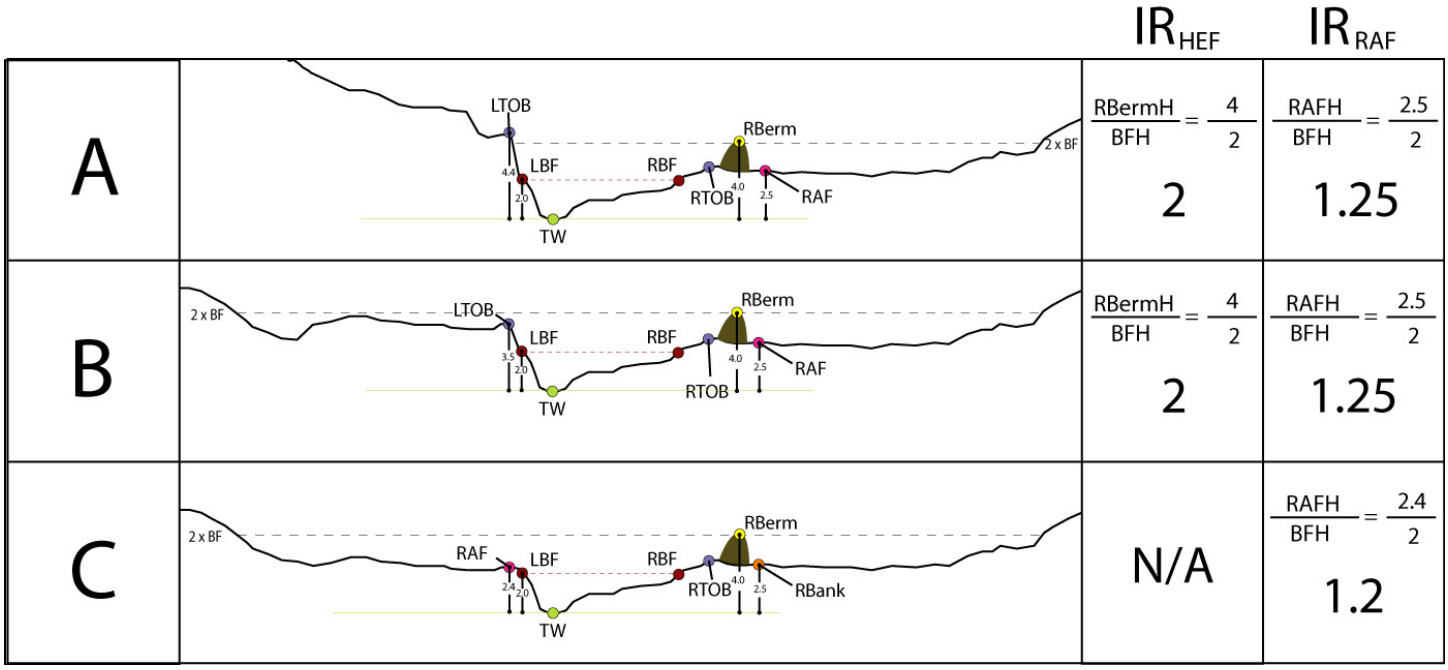

Figure caption: Three different cross section scenarios for a berm within the corridor. Labels are provided for the Left top of bank (LTOB), Left bankfull (LBF), Thalweg (TW), Right bank full (RBF), Right top of bank (RTOB), Right berm (RBerm), and the Right Bank (RBank). The solid green line represents the thalweg height. The red dashed line is equal to bankfull and the gray dashed line is equal to two times bankfull. Numbers represent heights (H) above the thalweg for each of the points.

A. There is no access to the flood plain; due to a natural feature on left side and a berm on the right side. The height of the berm would be used to calculate the incision ratio to be used in the RGA. Human caused incision ratio is calculated using the height of the berm (as measured from the thalweg of the channel) divided by the max depth. The human elevated incision ratio (IR_{HEF}) is 2.0. To determine what the incision ratio would be if the berm were removed; use the "recently abandoned floodplain" (RAF), to calculate the incision ratio. A berm removal project would make the incision ratio equal to 1.25. This incision ratio would be used in project planning.

B. There is access to an abandoned flood plain on the left side of the river, but a more recently abandoned and more accessible feature exists behind the berm on the right side. In this case the height of the berm would be used to calculating the incision ratio (IR_{HEF}) and the IR_{HEF} would be used in the RGA. In this scenario, the human elevated incision ratio is 2.0 and is calculated using the height of the berm (as

measured from the thalweg of the channel) divided by the max depth. To determine what the incision ratio would be if the berm were removed; use the “recently abandoned floodplain” (RAF), to calculate the incision ratio (IR_{RAF}). A berm removal project would make the incision ratio equal to 1.25.

C. There is access to the floodplain on the left side of the river opposite the berm. In this case, the top of the berm is not considered the “recently abandoned flooplain” (RAF). The human caused incision ratio (IR_{HEF}) does not need to be calculated for use in the RGA, as there is flood access to a feature on the left side that is at or slightly lower than the abandoned floodplain or terrace on the back side of the berm. The (IR_{RAF}) incision ratio would be used in the RGA, and is calculated using the RAF on the left (as measured from the thalweg of the channel) divided by the max depth for an incision ratio of 1.2. If the berm was removed incision would not change, but the river would have access to flood access to the terrace on both sides.