Hints for Rorschach's River

#1 **Simple Path** (rows 1 – 13)

- Any line connecting the left edge of the grid to the right edge of the grid is crossed by the path an odd number of times. This will be a very useful property throughout the puzzle.

#2 **Detour** (rows 11 – 26)

- Detour has a powerful parity property: if a region contains an even (odd) number of turns, the path will enter/exit it horizontally an even (odd) number of times (and equivalently for vertical entries/exits).

#3 **Masyu** (rows 24 – 39)

- Cells that the path must pass through straight (such as white Masyu pearls) can be used for entrance counting by imagining a diagonal line connecting opposite corners of the cell: the path will pass this line exactly once.

#4 **NIKOJI Path Data** (rows 37 – 52)

- Good notation for keeping track of which cells belong to which clue helps a lot in this subgrid.
- When you get stuck, look for places where a section can terminate: it must either connect to a clue of compatible orientation or the top/bottom of the subgrid.

#5 **Tapa-Like Path** (rows 50 – 65)

- Adding up all numbers in a clue tells you how many cells around the clue are visited, and often more importantly, how many are unvisited.

#6 **Poopapath** (rows 63 – 78)

- The rules are equivalent to the condition that each clue is directly connected to two different clues (and the path starts at PO—), which is often easier to work with for local deductions.

#7 **All or Nothing** (rows 76 – 91)

- Look for regions that, if left unvisited, would break an adjacent region by trapping an end of the path.

#8 **Myopia** (rows 89 – 104)

- If you get stuck in the second half of the subgrid, try some entrance counting in the vicinity of the 4-way clue.

#9 **Yajilin** (rows 102 – 117)

- The diagonal bottlenecks in R111 are useful for entrance counting.

- In the absence of grey cells, you can fit at most two shaded cells in any 2x3 rectangle, which often restricts clues pointing along adjacent rows/columns.

#10 **Canoe Slalom** (rows 115 – 130)

- Remember that any cross-section of the grid is crossed an odd number of times, which is particularly useful in rows that are almost entirely covered by gates.

#11 **Icebarn** (rows 128 – 143)

- Keep track of the directionality of each path segment and don't forget to copy crossmarks from one side of an ice patch to the other.
- Don't worry if the orientation of the path ends at the end of this subgrid seem incompatible, you'll be able to fix the topology later.

#12 **Vertex Slitherlink** (rows 141 – 156)

- Overlap section with Icebarn: taking into account the orientation of path segments, and loops, make sure you're not left with more path ends than you have columns through which to pass them further down.
- Overlap section with Rail Pool: Yes, the numbers apply to both rulesets.

#13 **Rail Pool (Partial)** (rows 154 – 169)

- The path cannot cross a region border between regions with disjoint sets of clues.
- How can you fit many/large segments in small regions, such as the dominoes with three clues?

#14 **Ice Walk** (rows 167 – 182)

- Parity is very useful for working with the number clues: if you consider a checkerboard colouring of the grid, even clues enter ice on different colours and odd clues on the same colour. This often lets you determine where a clue can and can't enter ice even if you can't determine its exact path yet.

#15 **Castle Wall** (rows 180 – 195)

- How can a path even satisfy white clues?
- What does the general shape of the path have to look like for it to still pass through the black clues at the bottom?
- The unnumbered grey cells at the top don't leave much room to make all this work out.

#16 **Turning Fences** (rows 193 – 208)

- Each clue essentially implies a 2x2 Detour region around it (without the requirement to visit every cell), which lets you apply the same kind of turn parity deductions.

#17 **Persistence of Memory (Full)** (rows 206 – 221)

- Make sure to copy path segments between corresponding regions, but also crossmarks.

#18 **Maxi Path** (rows 219 – 234)

- For regions with larger clues, checkerboard parity can often help you determine where the maximal segment can enter and exit the region.

#19 **Moon or Sun** (rows 232 – 247)

- Because the path visits each region exactly once, regions can be thought of as “metacells”. When considering which region borders the path can cross, make sure you don’t form a loop of these metacells.
- You can find an exit from the region around R240C8 regardless of which shape the path visits in this region. This can help you resolve the region around R242C9.

#20 **Crossing Statue Park Path** (rows 245 – 260)

- Don’t worry about fully resolving the upper overlap section for now, you’ll need some progress from below.
- How can all the path ends from the sun regions escape the upper right area of this subgrid?
- Even with crossings, the path still passes through any cross-section of the grid an odd number of times. Make sure the statues don’t squeeze an even number of path segments through.
- Overlap section with Country Road: statues cannot cross region borders as that would break the Country Road rules. And don’t forget that the path can still cross itself in these three rows.

#21 **Country Road** (rows 258 – 273)

- Because the path visits each region exactly once, regions can be thought of as “metacells”. When considering which region borders the path can cross, make sure you don’t form a loop of these metacells.

#22 **Hinge Path** (rows 271 – 286)

- Overlap section with Country Road: none of the borders inside these three rows can be hinges, as that would break the Country Road rules.
- Look for cells that cannot be shaded because they could reach no valid reflection.

#23 **Simple Knight’s Tour** (rows 284 – 299)

- Try shading cells in two colours to indicate whether they will be visited orthogonally or via knight’s moves, even if you don’t know yet how the path travels through them: the path can only connect same-coloured cells or clued cells to one cell of each colour.
- The path has to leave this subgrid moving orthogonally. How does it get there from the last ♘ it visits?

#24 **Equality** (rows 297 – 312)

- You can often figure out the length of each visit in a region before determining any path segments in it. In particular, the visit length has to divide the number of visited cells in the region evenly.

#25 **Oriental House** (rows 310 – 325)

- Notation tip: if you know that the path cannot cross an edge in one direction (but you don't know yet if the path crosses the edge at all), you can indicate this with a direction mark. This often makes it easier to see where the path *can* still pass through in a given orientation.
- Horizontal arrow clues must connect to a vertical region boundary and vice versa. Look for clues that only have very few options for doing so, or which are already forced to connect to an edge of the wrong orientation.
- Overlap section with Equality: once you've determined the visit length, you also know how many visits there are. Try roughly locating all of their entrances and exits to make sure you don't end up with too many.
- Don't worry if the orientation of different path segments in this subgrid seem incompatible, you'll be able to fix the topology later.

#26 **Alternating Kouchoku** (rows 323 – 338)

- Either all instances of a letter are visited orthogonally or all of them are visited with Kouchoku steps. You can often determine the movement type of a letter before any actual path segments.
- Each black dot has one orthogonal and one Kouchoku exit. One or both of these might be very restricted in where they can go.
- To get started, see if you can determine the first and last O (and don't miss the O in R333).
- Towards the end of solving this subgrid, you can determine the orientation of a path segment with a directional entrance count. Either across the grid (there has to be one more segment going down than up) or around the centre of this subgrid (there have to be an equal number of segments going in and out).

#27 **Train Stations** (rows 336 – 351)

- Cells that the path must pass through straight (such as station clues) can be used for entrance counting by imagining a diagonal line connecting opposite corners of the cell: the path will pass this line exactly once. Likewise, a diagonal line through a given crossing is passed twice by the path.
- Stations sandwiched diagonally between two crossings are very restricted.

#28 **Balance Path** (rows 349 – 364)

- Black clues must have at least one leg of length greater than 1 (and in the case of numbered black clues, more than half the clue value).
- Make sure you don't form a loop around the left-hand crossing.

#29 **Regional Yajilin** (rows 362 – 377)

- Subdivision often lets you determine shaded cells in larger regions. E.g. a 2x3 rectangle can only fit two shaded cells, and a 2x2 square at the edge of the grid can only fit one.

#30 **Slalom** (rows 375 – 390)

- You won't be able to resolve the final connection in the previous subgrid until you have some decent progress here, but it might be useful to notate which gate numbers each path end can possibly take, to see which numbered gates they have to avoid.

#31 **Area 51** (rows 388 – 403)

- The aliens and cacti often set up useful entrance counts that interact with uncircled number clues. In particular the path passes an even number of times between same clues and an odd number of times between different clues.
- Start by focusing on the 3x2 rectangles formed by these clues down the middle of this subgrid.

#32 **Koburin** (rows 401 – 416)

- Consider the four 3-clues in the centre together.

#33 **Mukkonn Enn** (rows 414 – 429)

- The 3-3-3-3 clue is more restricted than it might seem. It might take some case analysis, but once you have some progress around it, you'll find that enough of its six options break to let you rule out one exit entirely.

#34 **Cross Border Parity Path** (rows 427 – 442)

- Try notating the light/dark parity of each visited cell, even if you don't know yet how the path visits it. It might also help to notate if a cell can only take a specific parity, even if you don't know yet if it will be visited.
- Overlap section with Fillomino: the existing path ends have the wrong parity to satisfy the clues in these regions. How can you use the T-junction of borders at the bottom of the subgrid to fix this without trapping the path?
- Start by figuring out whether the light 4-clue is satisfied before or after picking up the path segment on the right side.
- There are only two possible patterns of light cells in the right region. Their commonalities should let you restrict how the path segment on the right escapes this region.

#35 **Thoroughfare Fillomino** (rows 440 – 455)

- You might want to notate approximately where the right-hand 8-clue has to extend to see how it restricts other regions.

#36 **Pentopia Path** (rows 453 – 468)

- By the time you get to the lower overlap section, you don't have a lot of pentominoes left to use. Consider how the remaining ones behave near the edge of the grid.

#37 **Crossroads** (rows 466 – 481)

- Once you can approximately locate each crossing of a network, you get to place crossmarks everywhere else on the network.

- It can also help to separate a network into parts that can be easily entrance counted, such as an enclosed region or a line across the entire grid.
- Checkerboard parity generally helps here, but is particularly useful for resolving the region inside the 5-clue.

#38 **Exercise** (rows 479 – 494)

- Good notation makes this ruleset much easier to work with. Use directional marks wherever the path can only pass through in one direction (even if you don't know yet whether it will pass through there at all). The next two hints contain some basic deductions around this notation.
- A domino of blocks gives directional marks pointing outward from the short ends of the domino (and similarly, a block at the edge of the grid gives a directional mark pointing away from the edge).
- If the path pushes a block, it must turn in that cell. Therefore, if you have directional marks pointing in (out) on both horizontal edges of a block, you can place directional marks pointing out (in) on both vertical edges, and vice versa.
- After some initial progress in the top half of the subgrid, you'll find that a path segment has the "wrong" orientation and cannot connect to the main path directly. This means you have to exit this subgrid twice. In particular, directional marks between rows 489 and 490 will leave you with very few options.
- Since you can't exit through said bottleneck a third time, once the wrongly oriented segment is fully resolved, the rest of this subgrid must all connect directly to the main path segment, giving you stronger topological deductions about the path's orientation.

#39 **Portal Patrol** (rows 492 – 507)

- Overlap section with Exercise: only cells with a block are unvisited, which means that each 2x2 must contain at least one block.
- Be careful not to create a loop through multiple portals.
- The path can never pass through two adjacent edges, as that would create a fully visited 2x2. This heavily restricts entrance counting and the ability of path ends to avoid each other (e.g. because they would form a loop or have incompatible orientations).
- If you want to use entrance counting in this subgrid, make sure to count the portals as entrance too.

#40 **Midpath** (rows 505 – 520)

- Cells that the path must pass through straight (such as a Midpath clue inside a cell) can be used for entrance counting by imagining a diagonal line connecting opposite corners of the cell: the path will pass this line exactly once.

#41 **Running Path** (rows 518 – 533)

- Start by determining the path length between flags and the first flag.
- You can sort the flags into two groups based on the checkerboard parity of their cell.

- Since the path length is odd, it will alternate between visiting flags of both colours. Locally, this means that every other flag of the starting parity, has to connect to two flags of the opposite parity.

#42 **Inturnal** (rows 531 – 546)

- Marking the vertices with two colours or shapes to indicate whether they connect to the left or right edge makes this subgrid much easier.
- 1-clues (3-clues) are very restrictive for connecting to the right (left) edge of the grid.
- The path turns on 1- and 3-clues, goes straight through 2-clues and does not visit 0- and 4-clues.

#43 **Nurikabe-Like Path** (rows 544 – 559)

- The right-hand 5 is more restricted than it might seem.
- Keep entrance counting across the grid in mind: make sure you don't squeeze an even number of path segments through the gaps between the unvisited areas.

#44 **Linesweeper** (rows 557 – 572)

- When clues form a domino, they share a lot of cells they can both see. What does that tell you about the sets of cells that only one of them can see?
- The dominoes left and right of the central columns also interact with each other, either due to entrance counting, or because one domino forces a turn on one side.

#45 **Bhai Bahan** (rows 570 – 585)

- Don't forget about the straight cell before and after a completed segment of turns, and vice versa.
- It is not strictly necessary for this puzzle, but you can apply some turn parity logic (as seen in Detour) by considering that each domino of clues contains exactly one turn.

#46 **Alternate Path** (rows 583 – 598)

- You can think of each path end as having a colour corresponding to the nearest clue it has visited. Cells which are surrounded on all open sides by path ends of the same colour must be unvisited (as visiting them would connect two identical clues).

#47 **Transporteur (Full)** (rows 596 – 611)

- Keeping track of which unrelated parcels the driver will be carrying at each destination, and when the driver is at full capacity, can help greatly with determining an overall order in which the destinations are visited.
- Since you don't have to worry about the path crossing itself any more, you can make full use of oriented path logic, some of which is detailed in the next hint.
- Along each horizontal gridline, the closest segment to either edge of the grid points down. All vertical segments in C1 (or in C10) are visited in order from top to bottom. Two sections of the path travelling alongside each other must point in opposite directions.

#48 **Hotaru Path** (rows 609 – 624)

- The last two hints for Transporteur are still very useful in this subgrid.
- It often helps to look one turn ahead to see where an almost completed clue can connect.
- Make sure not to form a loop involving the 4-clue, even if you can't determine its exact trajectory yet.

#49 **Slitherlink** (rows 622 – 637)

- If two adjacent edges around a cell contain one path segment and one crossmark, exactly one of the two remaining will be used (which is useful if there is a clue between these edges).

#50 **Delta Walk** (rows 635 – 647)

- Parity is very useful for working with the number clues: if you consider a checkerboard colouring of the grid, segments through even clues terminate on different colours and those through odd clues on the same colour. This often lets you determine where a clue can and can't terminate even if you can't determine its exact path yet, and in particular often lets you determine whether a clue is visited by the path or an offshoot.
- Note that offshoots can not enter another orange cells.
- The path travels between offshoots reaching left/bottom and right sides of the grid.
- Near the end, be careful not to trap the lower right 8 in its corner.