

Stage-11: Tap -9 Basin Cleanup — Run Sheet (v1)

Commands + Before/After PCA (post-outlier trim)

Context:

- Pre-warp basin already shows a proto-well (training/finetune/normalization metrics)
- NGF Warp (always-on + soft detect + optional denoise) consolidates the well and suppresses phantoms.
- Goal: hollow/narrow the main well while avoiding grabby behavior and regressions.

A) Center-sharpen

```
python3 /mnt/data/ngf_benchmark.py \  
--mode ngf --ngf_import ngf_hooks:attach_ngf_hooks \  
--model gpt2 --split validation --n 1000 --max_length 768 --devi \  
--tap -9 \  
--alpha0 0.06 --alpha_min 0.010 --trend_tau 0.32 --k_tr 12 \  
--use_detect 1 --detect_width 24 --detect_sigma 5 --null_K 32 -- \  
--s_latch 0.30 --linger 2 --ema_center_beta 0.04 \  
--gen_mode geo --save_hidden 1 --hidden_dump_dir results/passA \  
--out_json results/passA/metrics.json
```

Baseline (v4b T4/L4 geo):

```
--alpha0 0.05 --alpha_min 0.006 --trend_tau 0.35 --k_tr 12 \  
--use_detect 1 --detect_width 24 --detect_sigma 5 \  
--null_K 32 --null_q 0.92 --k_det 7 \  
--s_latch 0.30 --linger 2 --ema_center_beta 0.05 \  
--gen_mode geo --max_new_tokens 96 --tap -9
```

B) Steeper walls (depth>width)

```
python3 /mnt/data/ngf_benchmark.py \  
--mode ngf --ngf_import ngf_hooks:attach_ngf_hooks \  
--model gpt2 --split validation --n 1000 --max_length 768 --devi \  
--tap -9 \  
--alpha0 0.06 --alpha_min 0.010 --trend_tau 0.30 --k_tr 12 \  
--use_detect 1 --detect_width 22 --detect_sigma 4.5 --null_K 32 \  
--s_latch 0.35 --linger 3 --ema_center_beta 0.04 \  
--gen_mode geo --save_hidden 1 --hidden_dump_dir results/passB \  
--out_json results/passB/metrics.json
```

C) Phantom collapse (strict null + capped detect)

```
python3 /mnt/data/ngf_benchmark.py \  
--mode ngf --ngf_import ngf_hooks:attach_ngf_hooks \  
--model gpt2 --split validation --n 1000 --max_length 768 --devi \  
--tap -9 \  
--alpha0 0.06 --alpha_min 0.010 --trend_tau 0.30 --k_tr 12 \  
--use_detect 1 --detect_width 20 --detect_sigma 4.0 --null_K 48 \  
--s_latch 0.35 --linger 3 --ema_center_beta 0.04 \  
--gen_mode geo --save_hidden 1 --hidden_dump_dir results/passC \  
--out_json results/passC/metrics.json
```

What to upload/track:

- Before/After PCA panels for each pass (A/B/C) using tap9_pre.npy vs tap9_post.npy
- Quick metrics: depth, width, phantom lobes, density, entropy, stability (no regressions)
- Keep HellaSwag or ARC text bench neutral or ↑; watch omission/hallucination rates

Saved: basin_cleanup_run_sheet_v1.pdf | tap: -9 | NGF v4b doctrine (always-on warp; detect as gain; optional denoise)

Tap -9 — PCA-2: Before (left) vs After Warp (right)

