8-6-2004

Ex. 277-US-428

R. Nawa
Oregon Department of Fish and Wildlife

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Oregon Department of Fish and Wildlife

Stream: Williamson River
Tributary To: Lower Klamath Lake
Survey Type: ODFW Stream Habitat
Reach: 3 (Units 27-38)
Access: Canoe
Start: T35S-R07E-S03NW
Quad: Chiloquin, Soloman Butte, Fort Klamath
Date Surveyed:5-6 August 04
Surveyors: R. Nawa K. Hartzell
Report: R. Nawa, C. Huntington
Distance Surveyed: 8.9 km

Reach Description
Reach 3 was Sprague River to Spring Creek (map).

Land Use
Land use is urbanized through the town of Chiloquin. Cattle pasture dominates upstream of Chiloquin with some interspersed rural residential.

Valley and Stream Channel Geometry
The 0.02 percent gradient river was in a broad valley over 1 km wide. Sinuosity was low (1.2). Low terraces sloped abruptly to form narrow floodplains adjacent to the 44 m wide river. The wetted width abruptly widened from 35 m at unit 30 to 73 m at unit 31 where eroding streambanks have been heavily grazed.

Substrate
The streambed was very fine textured. An estimated 90 percent of the streambed was in sand and organics, one percent gravel, two percent cobble, and five percent bedrock. Exposed bedrock suggests that alluvium forms a relatively thin layer of substrate that is vulnerable to being lost with scour. Natural bedrock sills or dikes were common in areas above Chiloquin bridge. One sill formed a 0.25 m high falls or step (U33, map).

Spawning Gravel
Surveyors visually estimated about 5,000 m^2 of gravel/cobble in an expansive glide below Spring Creek suitable for Chinook salmon and steelhead spawning (map). The glide contained an estimated 10-15 old rainbow trout redds. Scattered mid-channel bars in the pool above Chiloquin bridge provided small patches of suitable gravel that may have been used by spawning rainbow trout and would also be suitable for steelhead.

Due to very low stream gradient, only 2 percent of the channel area was in riffle habitat. Lack of riffles greatly limited the potential for suitable spawning gravel. A bedrock step at unit 35 could be enhanced for spawning with the artificial addition of suitable sized spawning gravel. Spawning gravel area could be increased by 1,300 m^2 at this location.

Riparian Vegetation
Patches of willows and scattered hardwoods border the river, but grass dominates the

riparian zone. Shade, which averaged 13 percent, is not a factor in cooling the river. Apparently existing grass and willow cover is adequate to stabilize most streambanks because only 2 percent of the streambanks were eroding. Heavy livestock grazing resulted in eroding streambanks on the west bank at unit 31, The river is shallow enough here to permit livestock to cross the river and graze the east bank, thus rendering the east bank riparian fence ineffectual.

Wood

Wood debris (6 pieces/100m) was mostly sunken saw logs. These logs are presumably an artifact from temporary log storage to supply former saw mills. Concentrations of saw logs in pools and glides are not affecting channel morphology (i.e. wood is not storing sediment or causing local scour). Very few (if any) trees from the riparian zone are falling into the channel.

Rearing and Adult Holding Habitat

A comlex of boulder cascades and riffles (U27, U28, U30) at the beginning of reach 3 form a hydraulic control for a huge 5.9 km long pool that extends through and upstream of Chiloquin. The maximum depth of this pool was 3.2 m in Chiloquin. This pool has the potential to hold large numbers of Chinook salmon but nearby spawning gravel is lacking.

Stream Temperature

Flow from the Spring Creek (8.5 C) decreased the temperature of the Williamson River from 17.6 C above Spring Creek to 9.0 C below Spring Creek (1530 pdt).

Photo 36 Unit 27
Boulder rapids formed a distinct hydraulic control at the beginning of reach 3.

Photo 37 Unit 31
Portion of 5.4 km pool that dominated reach 3. Maximum depth was 3.2 m in the town of Chiloquin.

Photo 41 Unit 35
A 0.25 m high bedrock step spans the width of the river. The bedrock step could be enhanced with the artificial addition of spawning gravel.

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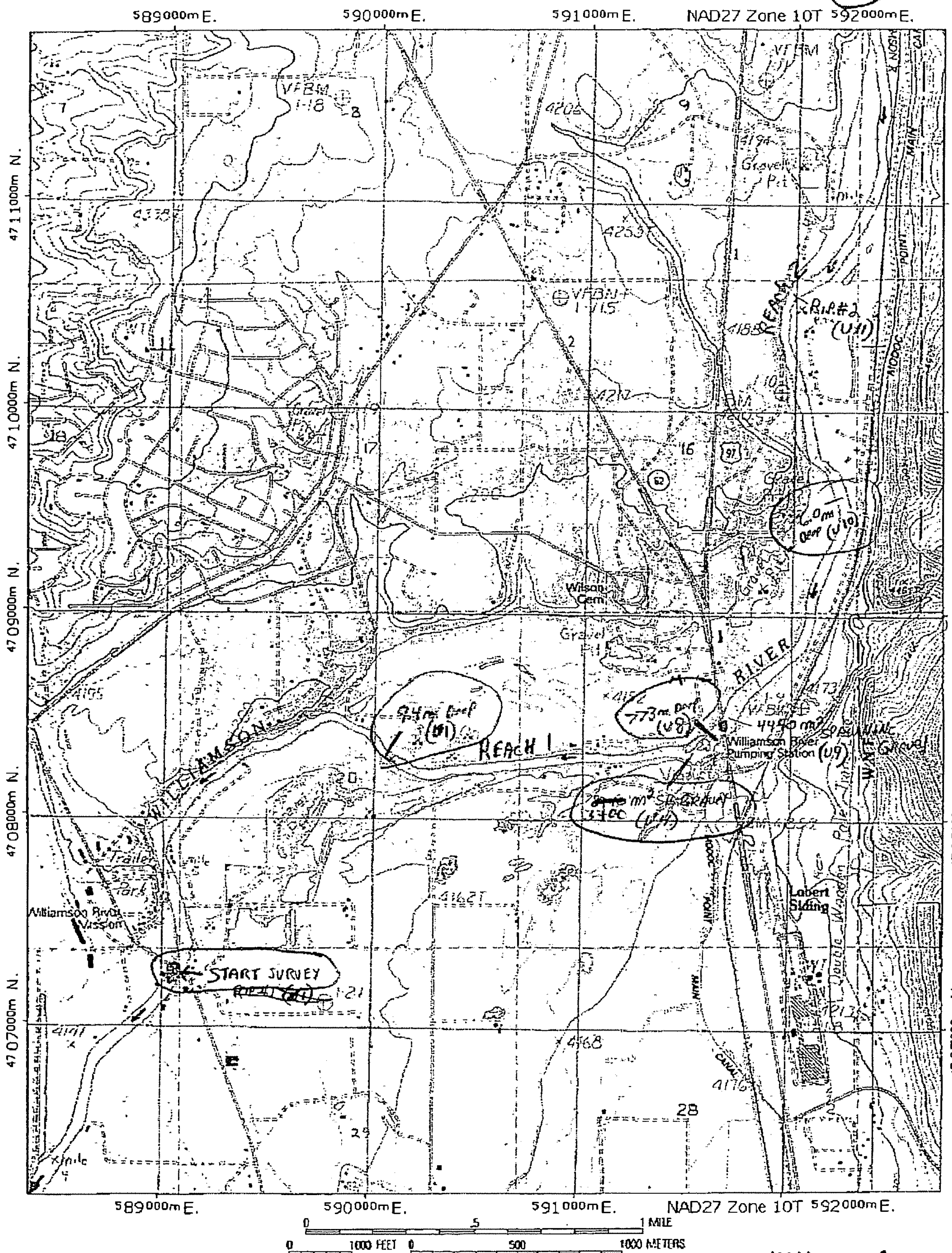

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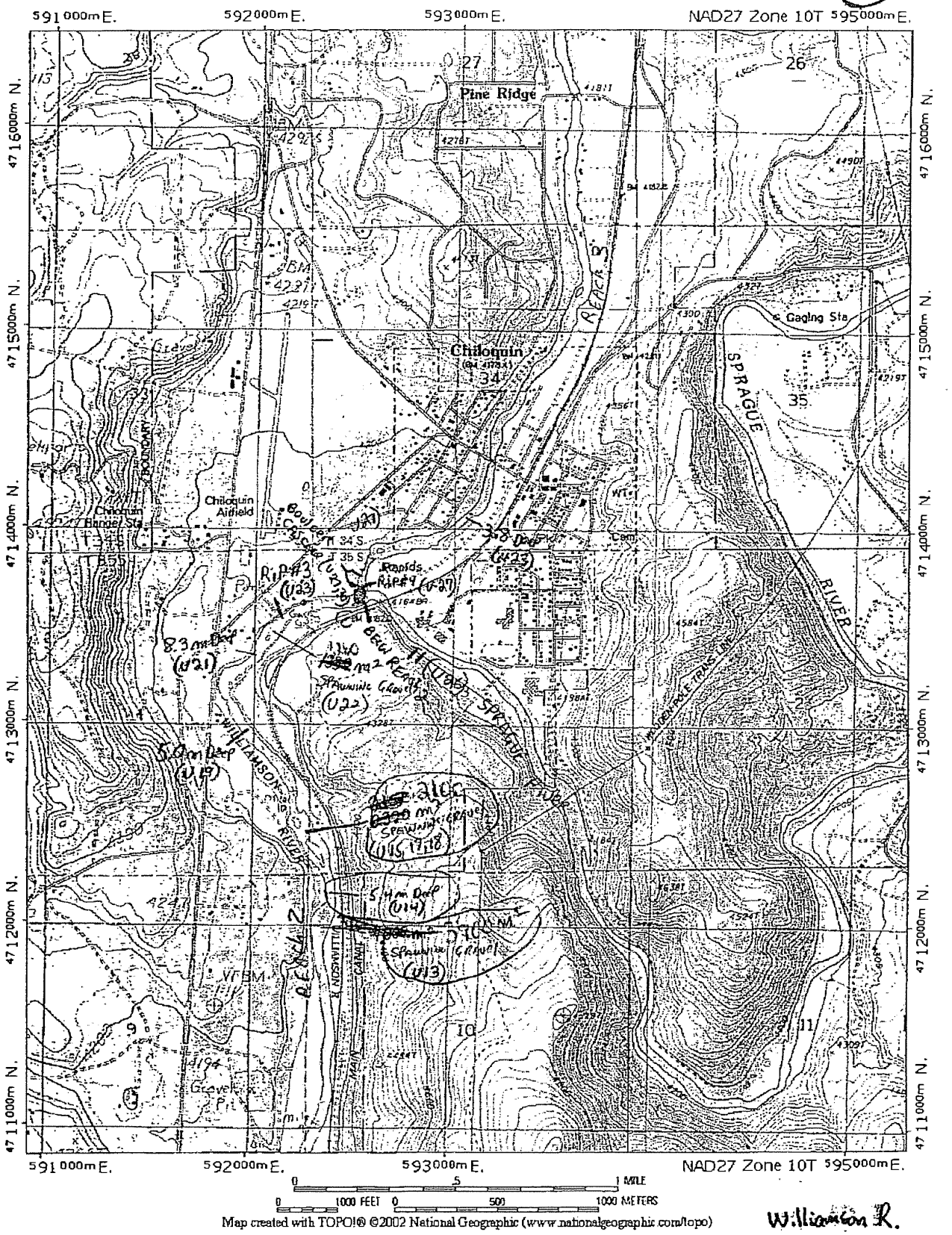
3/6
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592000mE.
593000mE.
NAD27 Zone 10T 595000mE.
4716000m N.
4715000m N.
4714000m N.
4713000m N.
4712000m N.
4711000m N.
Pine Ridge
Chiloquin
Chiloquin Airfield
Chiloquin Ranger Sta.
Gaging Sta
SPRAGUE
RIVER
WILLIAMSON
Rapids
Riffle
Sprawling Gravel
Gravel Pit
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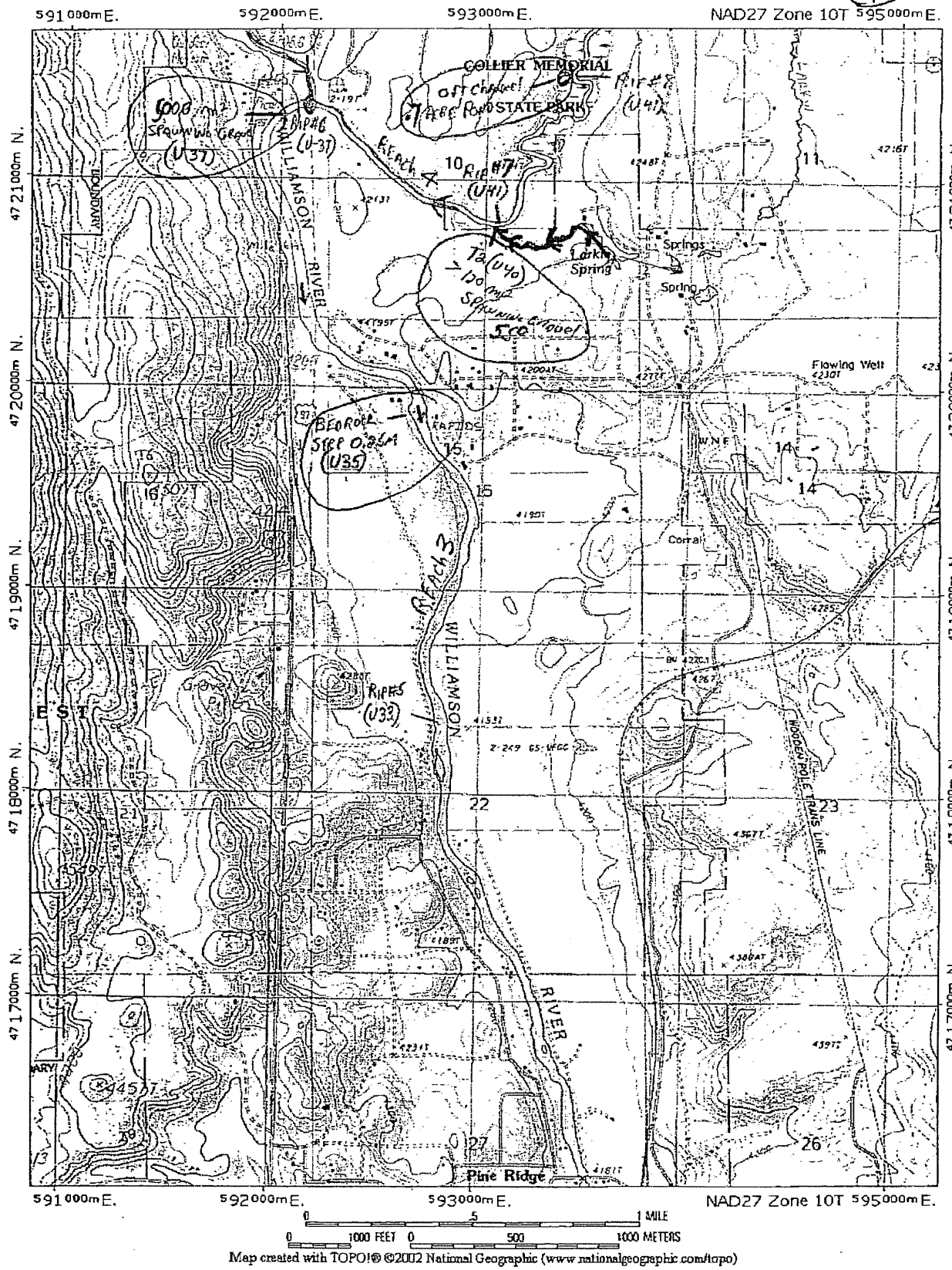
Williamson R.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592000mE.
593000mE.
NAD27 Zone 10T
595000mE.
47 21000m N.
47 20000m N.
47 19000m N.
47 18000m N.
47 17000m N.
COLLIER MEMORIAL STATE PARK
Riffle #8 (U41)
Riffle #7 (U41)
Riffle #6 (U37)
Riffle #5 (U33)
Riffle #4
Riffle #3
WILLIAMSON RIVER
Springs
Larkin Spring
Spring
Flowing Well
Corral
WNE
Pine Ridge
WOODEN POLE TRANS LINE
0 5 1 MILE
0 1000 FEET 0 500 1000 METERS
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Spring Creek

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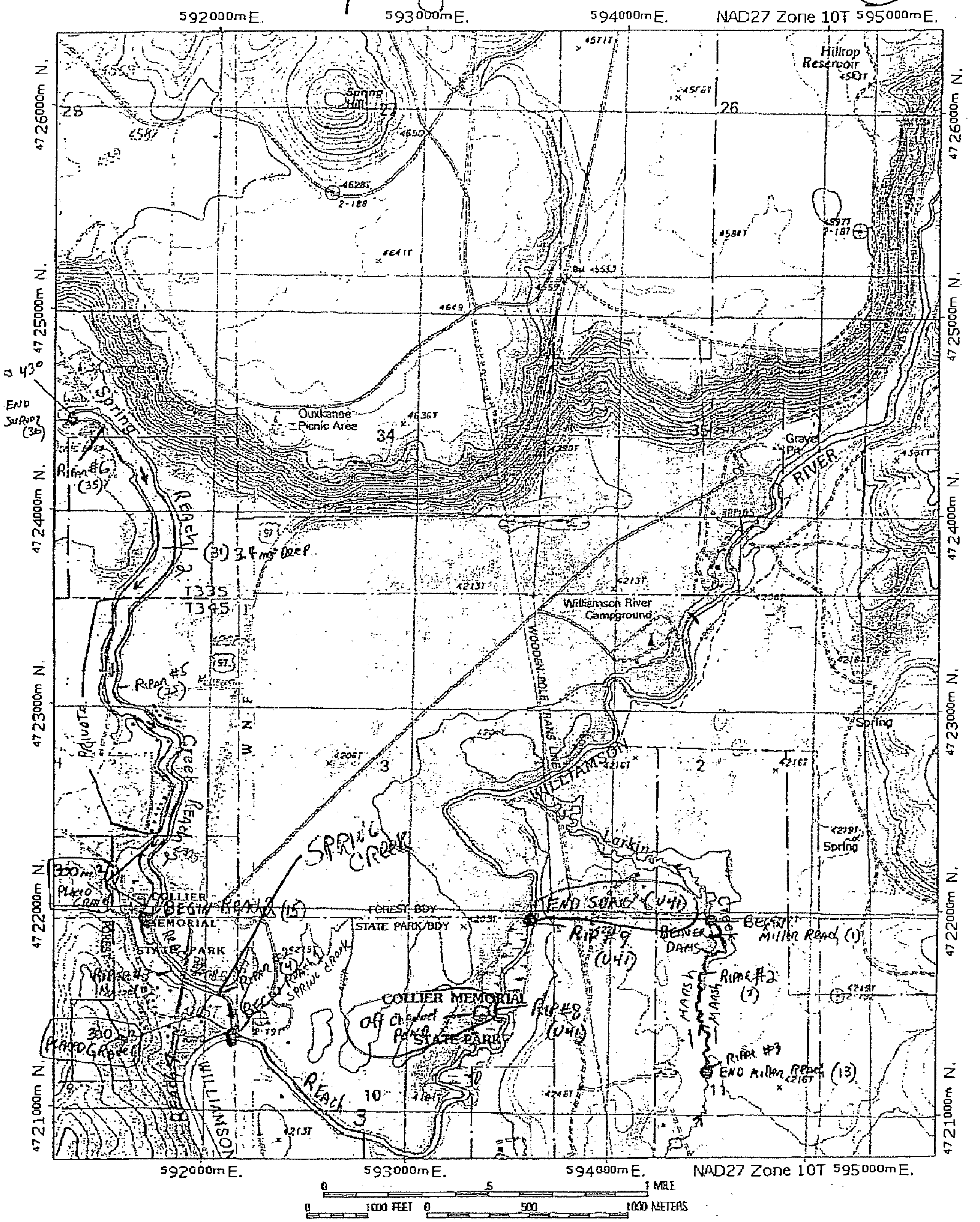
592000mE.
593000mE.
594000mE.
NAD27 Zone 10T 595000mE.
4726000m N.
4725000m N.
4724000m N.
4723000m N.
4722000m N.
4721000m N.
Spring Hill
Hilltop Reservoir
Ouxkanee Picnic Area
Gravel Pit
RIVER
Williamson River Campground
WOODEN POLE TRANS LINE
WILLIAMSON
Larkin Creek
Spring
COLLIER MEMORIAL STATE PARK
FOREST BDY
STATE PARK BDY
T33S
T34S
END SURVEY (36)
Spring Reach 2
Creek Reach 1
SPRING CREEK
BEGIN REACH 2 (15)
END SURVEY (U41)
BEAVER DAMS
Begin Miller Road (1)
END Miller Road (13)
MARSH
Reach 3
0
.5
1 MILE
0
1000 FEET
0
500
1000 METERS
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Williamson River

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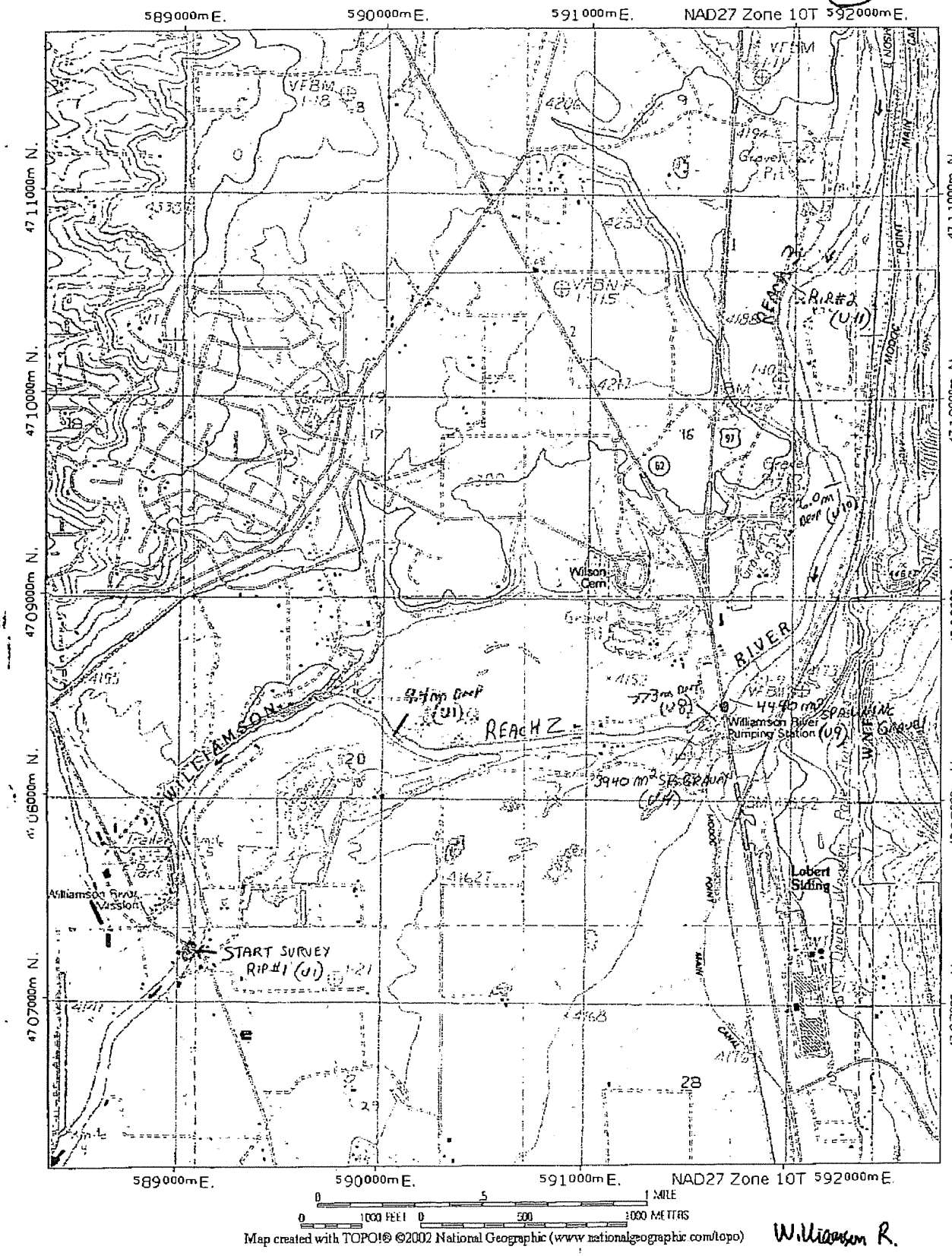

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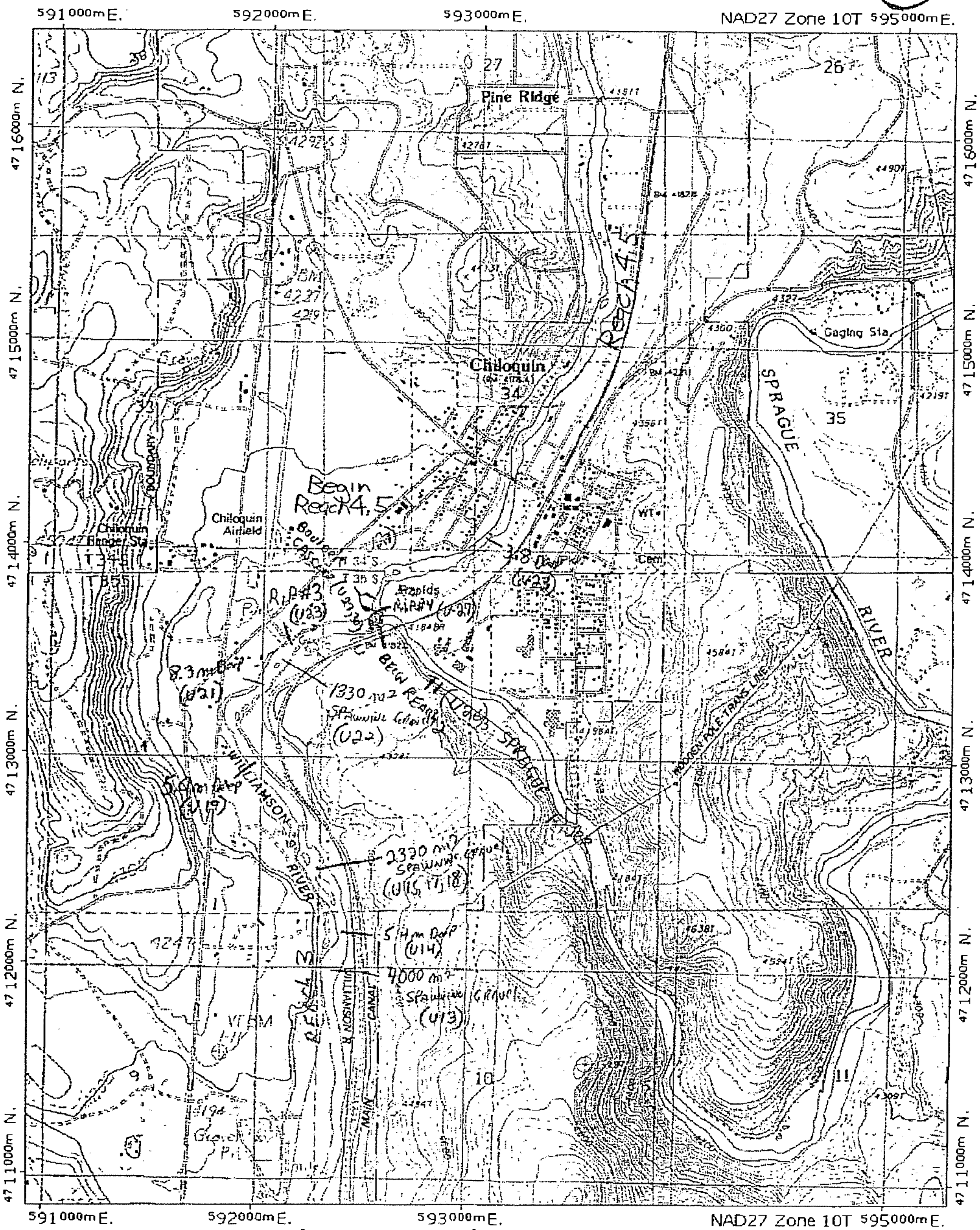
591000mE.
592000mE.
593000mE.
NAD27 Zone 10T 595000mE.
4716000m N.
4715000m N.
4714000m N.
4713000m N.
4712000m N.
4711000m N.
Pine Ridge
27
26
Chiloquin
34
35
Gaging Sta
SPRAGUE
RIVER
Begin Reach 4.5
REACH 4.5
Chiloquin Airfield
Chiloquin Range Sta
BOUNDARY
T 34 S
T 35 S
Rapids
Cem
WT
WILLIAMSON
RIVER
MAIN
CANAL
10
11
2
BPA POLE TRANS LINE
8.3 m Dep
(U21)
1330 m2 Spawning Gravel
(U22)
2330 m2 Spawning Gravel
(U15, 17, 18)
5.4 m Dep
(U14)
4000 m2 Spawning Gravel
(U13)
(U23)
591000mE.
592000mE.
593000mE.
NAD27 Zone 10T 595000mE.

0 .5 1 MILE
0 1000 FEET 0 500 1000 METERS

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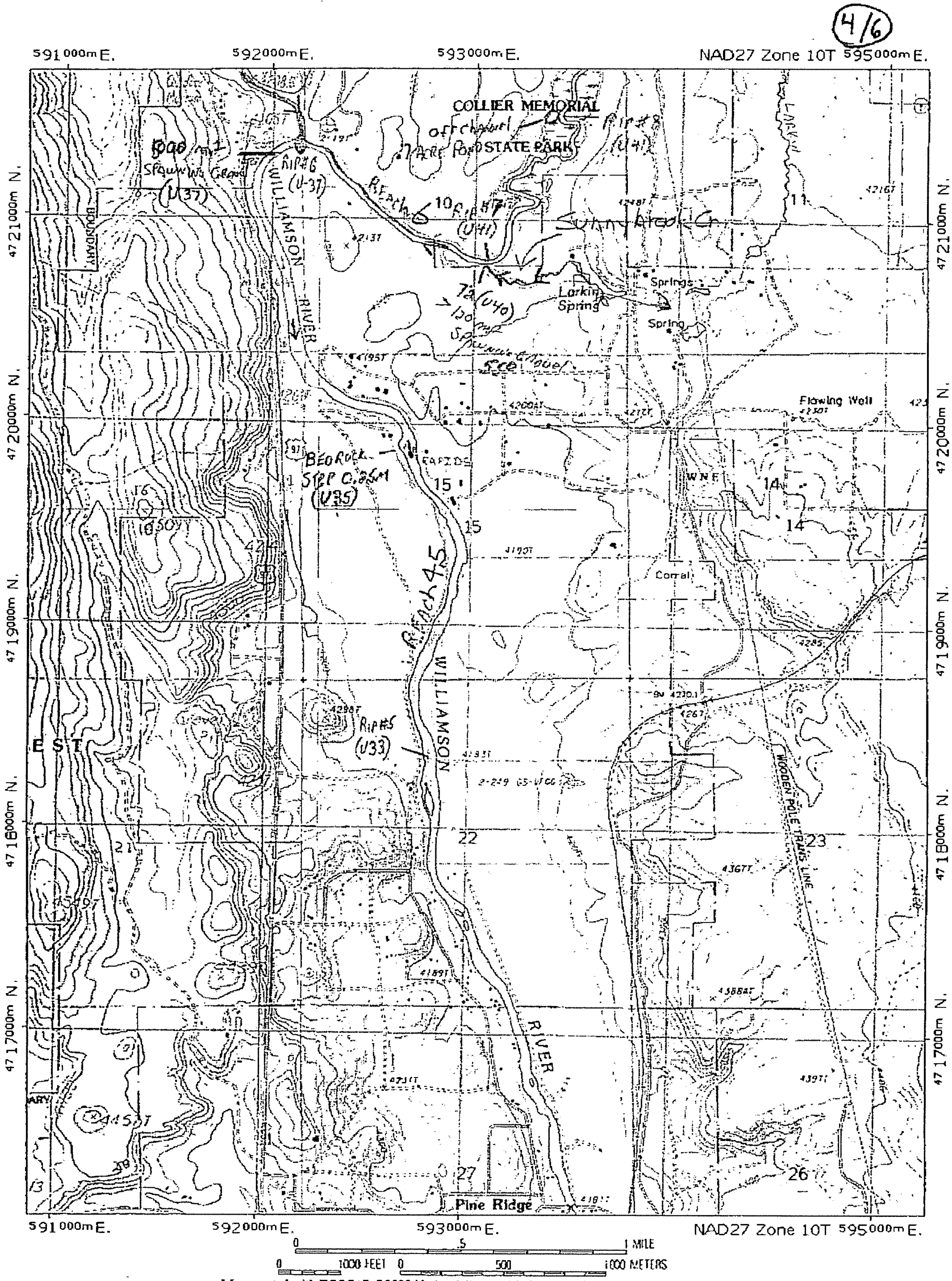

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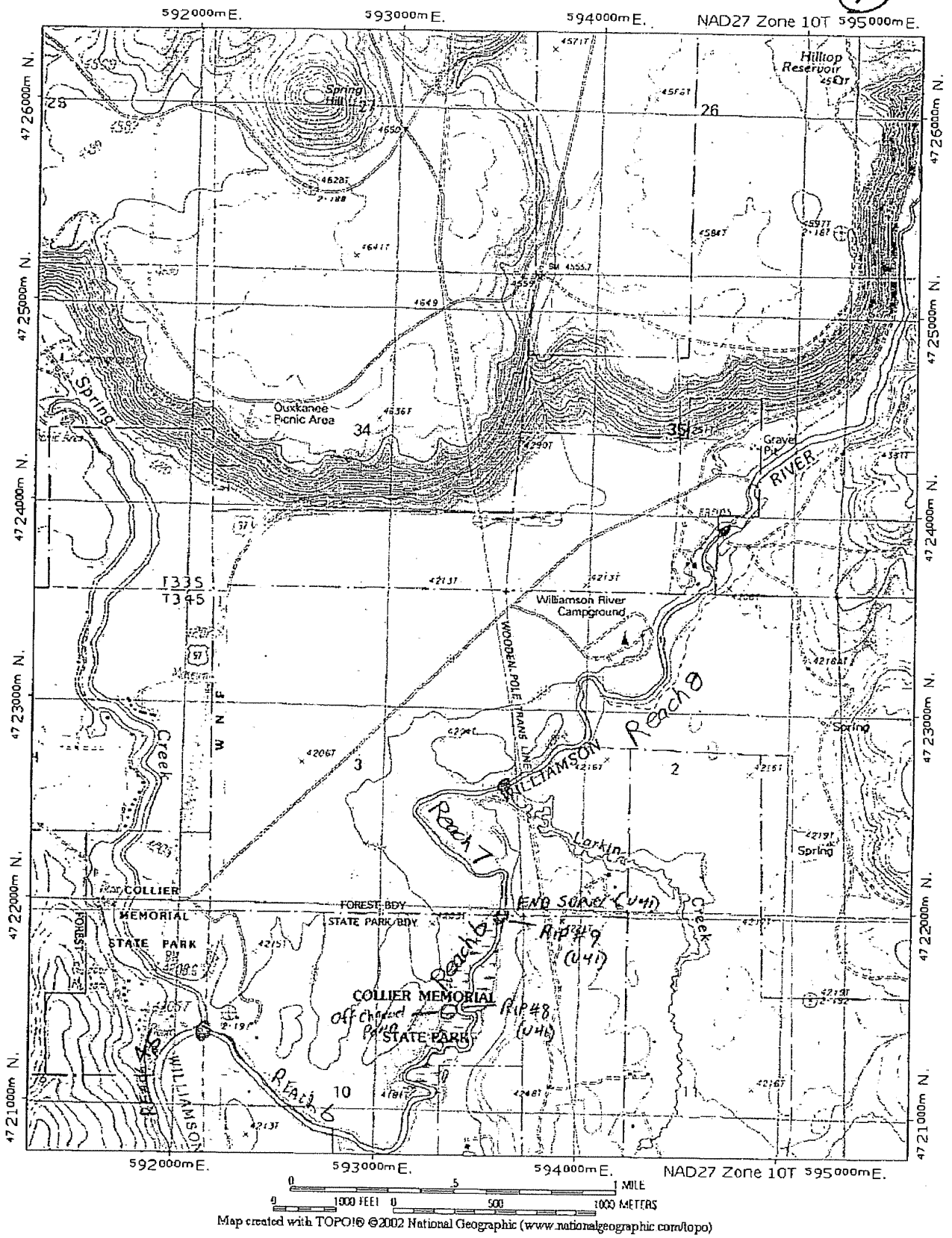

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