ICF Jones & Stokes
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Memorandum

Date: July 14, 2009

To: Dana Field, Oregon Department of State Lands

Bill Abadie, United States Army Corps of Engineers

cc: Elton Kemnitz, Garret Creek Mitigation Bank LLC; Steve Binns, Garret Creek Mitigation Bank LLC

From: Brent Haddaway, ICF Jones and Stokes

Subject: **Vegetation Monitoring Results**

Ms Field and Mr. Abadie:

The purpose of this memorandum is to document the results of the Year 1 vegetation monitoring performed at the Garret Creek Mitigation Bank performed on June 24, 2009. This memorandum specifically addresses performance standards for vegetation described in the Garret Creek Mitigation Bank Instrument. The fieldwork was performed by Elton Kemnitz, Levi MacDonald, and myself. I identified all plants and recorded data, Mr. Kemnitz and Mr. MacDonald assisted by laying out measuring tapes, flagging quadrat locations, and generating random numbers. All data calculations were performed by ICF Jones & Stokes.

Data was collected within quadrats or via line intercept along transect lines evenly spaced along planted portions of the mitigation bank site. Areas of existing vegetation were not included in vegetation surveys; these areas had no planting densities to record and invasive species cover results did not warrant survey of the existing vegetation areas (cover was >1% in surveyed areas). A baseline was established along the upland buffer edge (toe of slope), extending the length of the site (Appendix A). Transects were measured east/west or north/south off the baseline and used to measure invasive species cover via line intercept method. Rectangular quadrats (3 feet X 50 feet) were established at random intervals along each transect to measure planted stem density. A 3 X 3 foot quadrat was also established for each transect to estimate cover of herbaceous species – herbaceous cover data is not presented in this memorandum but is available if requested. ICF Jones & Stokes recommends evaluating herbaceous species in Year 3 of monitoring; most herbaceous cover is currently annual or horticultural species that do not provide insight to site hydrologic conditions.

Monitoring results indicate that vegetation performance standards have been met for Year 1. Planted woody vegetation appears to have a survival rate of nearly 100%, and invasive species cover within planted portions of the site was recorded as <1%. Volunteer seedling Oregon ash

(*Fraxinus latifolia*) was observed in many areas within the site. A total of 6 species contributed at least 5% of the relative abundance of living stems. Clumps of 5 or more Oregon ash seedlings were counted as one living plant during stem density data collection in 4 quadrats. Vegetation data for stem density, relative abundance of woody stems, and invasive species cover are displayed in Tables 1-3. Complete data for each plot can be found in Appendix B.

Table 1. Wetland Area Stem Density Results by Species

Species	Average Occurrence per Quadrat	Stems/acre	Relative abundance
S Lasiandra	1.263158	366.315789	32%
F Latifolia	1.052632	305.263158	26%
P. balsamifera	0.210526	61.0526316	5%
S Sitchensis	0.526316	152.631579	13%
P menzesii	0	0	0%
R Nutkana	0.421053	122.105263	11%
C Stolonifera	0.315789	91.5789474	8%
P capitatus	0.105263	30.5263158	3%
S albus	0.105263	30.5263158	3%
Total	4	1160	101%

Table 2. Upland Area Stem Density Results by Species

Species	Average Occurrence per Quadrat	Stems/acre	Relative Abundance
S Lasiandra	1	290	31%
F Latifolia	1.5	435	23%
P. balsamifera	1.333333	386.6667	31%
S Sitchensis		0	
P menzesii	1	290	19%
R Nutkana		0	
C Stolonifera		0	
P capitatus		0	
S albus		0	
Total	2.6	754	104%

Table 3. Invasive Species Cover by Transect

Species	Transect Intercept (feet)	Total Transect Length (feet)	Aerial Cover
Phalaris arundinacea	5.5	5943	>1%
Cirsium arvense	4.0	5943	>1%
Total	9.5	5943	>1%

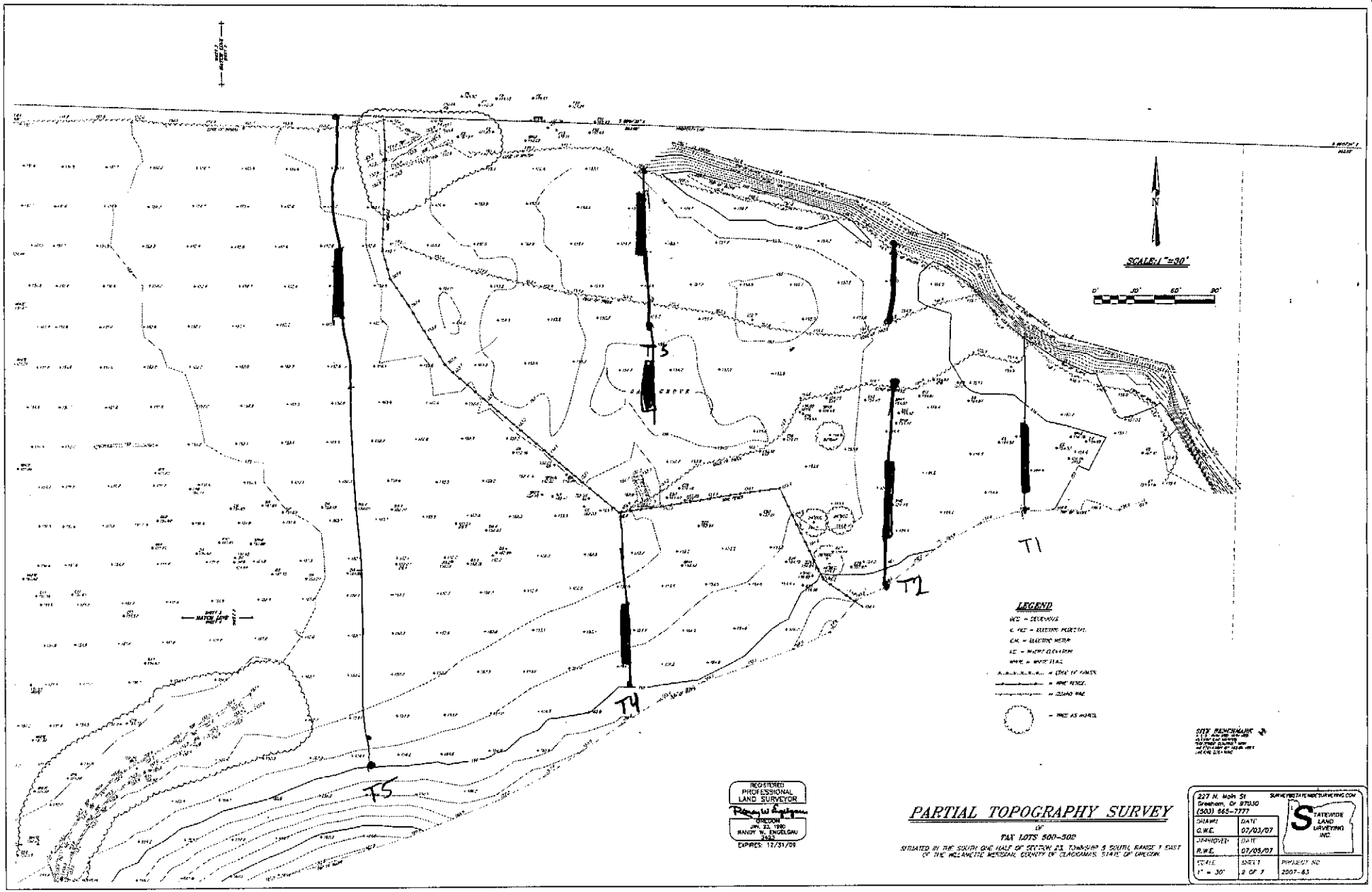
Please contact me with any questions regarding the methods used or results from this vegetation monitoring effort.

Sincerely,

Brent Haddaway PWS
ICF Jones & Stokes

Appendix A

Approximate Vegetation Transect and Quadrat Locations



REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON
JAN. 23, 1990
RANDY W. ENGELSAU
EXPIRES: 12/31/09

PARTIAL TOPOGRAPHY SURVEY

OF

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SITUATED IN THE SOUTH ONE HALF OF SECTION 23, TOWNSHIP 3 SOUTH, RANGE 1 EAST OF THE WILLAMETTE MERIDIAN, COUNTY OF CLACKAMAS, STATE OF OREGON

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STATEWIDE LAND SURVEYING INC.

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APPROVED: R.W.E.	DATE: 07/05/07
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PROJECT NO: 2007-83	

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LEGEND

DEC = DECIDUOUS

E. POST = ELECTRIC POST/PED.

E.M. = ELECTRIC METER

T.C. = SURVEY ELEVATION

WHITE = WHITE FLAG

= EDGE OF GRASS

= WIRE FENCE

= GUARD RAIL

= TREE AS NOTED

SCALE: 1"=30'

0' 30' 60' 90'

T10 T9 T8 T7

REGISTERED PROFESSIONAL LAND SURVEYOR

OREGON JAN. 23, 1996 RANDY W. ENGELCAU 2553

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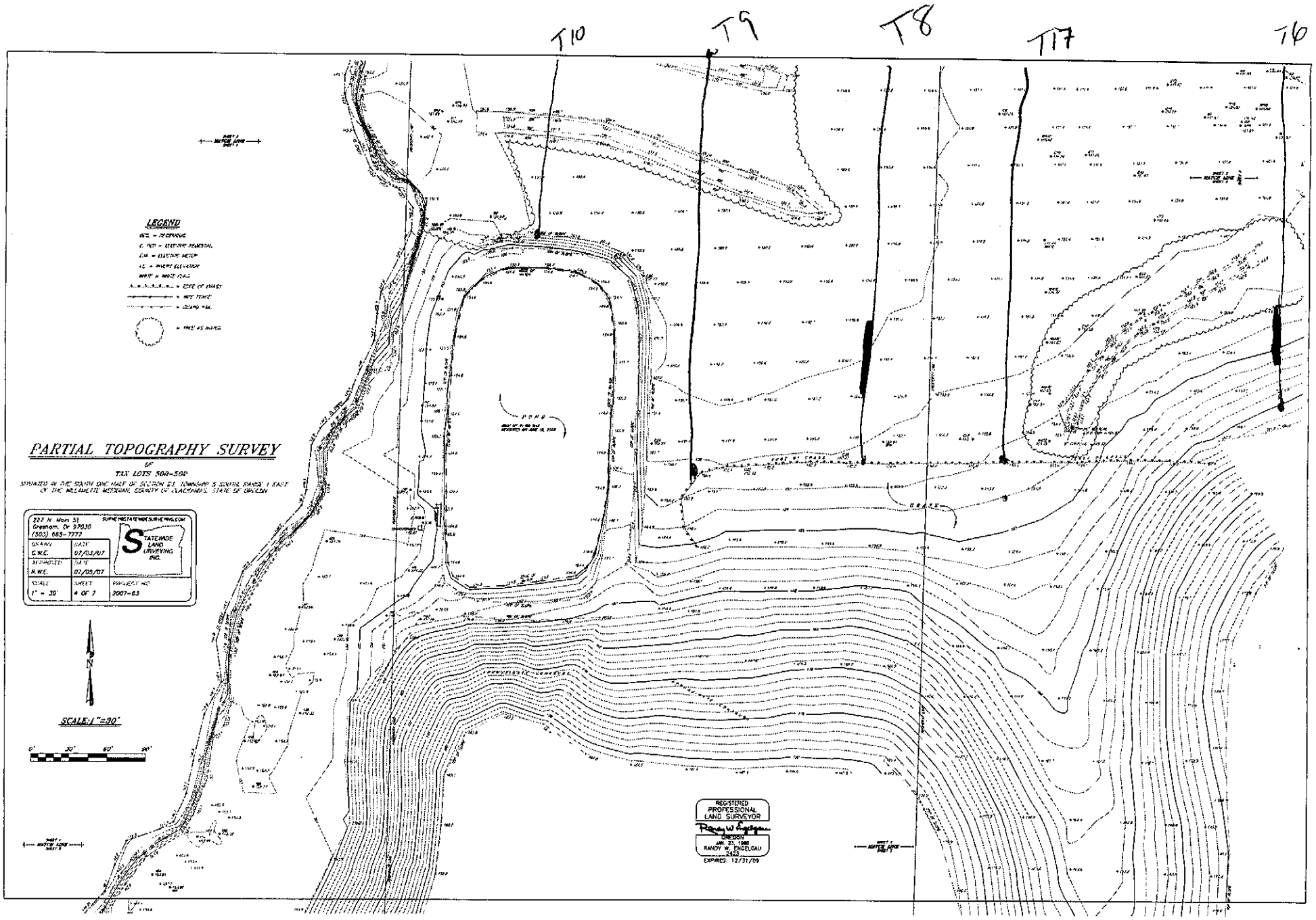
2007-63	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T9
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T6
LEGEND
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1" = 30'
SHEET
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PROJECT NO.
2007-63
SCALE: 1"=30'
0' 30' 60' 90'
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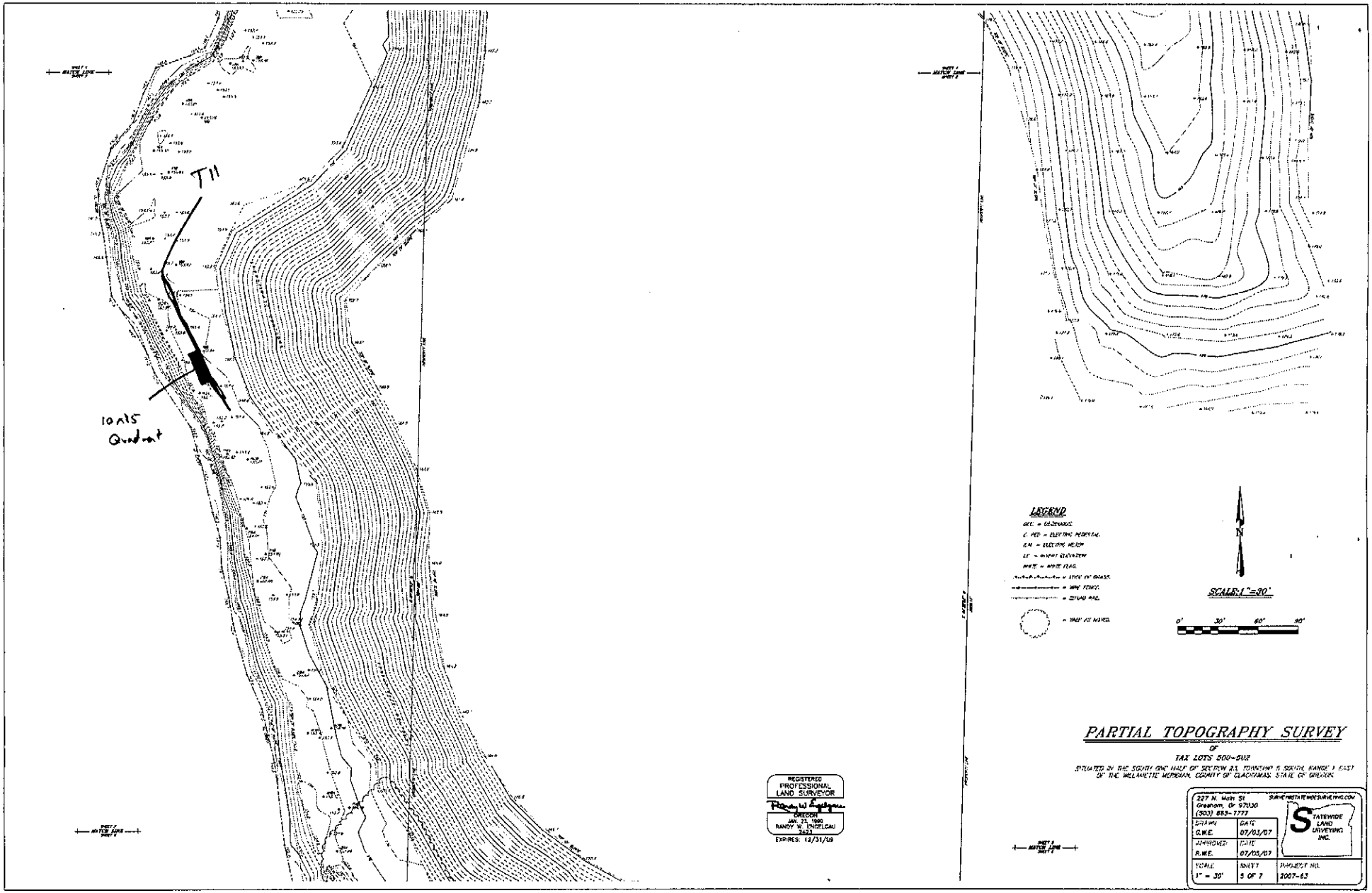
REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON
JAN. 21, 1986
RANDY W. ENGELCAU
2423
EXPIRES: 12/31/09



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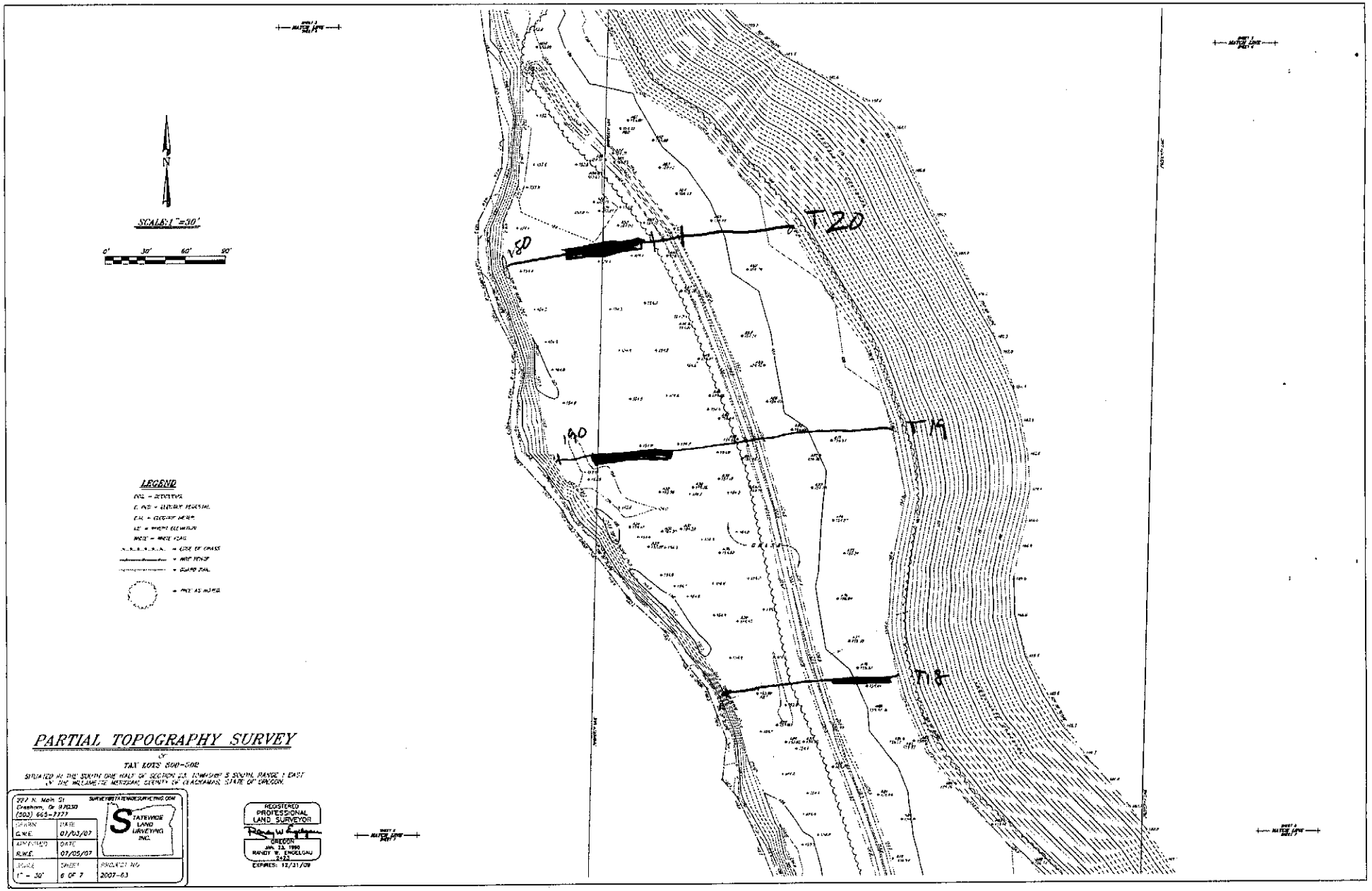

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