



DIVISION OF ENGINEERING AND ROADS
A DIVISION OF THE PUBLIC WORKS DEPARTMENT

January 11, 2016

City of Spokane Valley
Attn: Henry Allen, Development Engineer
11707 E. Sprague Ave, Ste. 106
Spokane Valley, WA 99206

RECEIVED
JAN 13 2016
SPOKANE VALLEY
COMMUNITY DEVELOPMENT

RE: Painted Hills PRD Floodplain/CLOMR Submittal Review #1

Henry,

Thank you for the opportunity to review and comment on the proposed Painted Hills PRD in the City of Spokane Valley. We appreciate the coordination and support in our efforts to insure that the proposed floodplain revisions meet the requirements of FEMA and both jurisdictions flood protection ordinances. Not only are some of the flood control facilities located within the unincorporated area of Spokane County but due to the proximity the development within the City could impact unincorporated Spokane County in any case.

Spokane County Engineering (SCE) concurs with the comments of the City of Spokane Valley (CSV) provided in your emails of 12/31/2015 and 1/6/2016. The SCE has also performed a preliminary review of the floodplain submittals and draft CLOMR application including HSPF and HEC-RAS model files received from the CSV. We have reviewed the proposed Spokane County floodplain modifications for compliance with the Spokane County Flood Damage Protection Code (SCC 3.20) and the Spokane Regional Stormwater Manual and also reviewed the proposed floodplain modifications within the CSV for impact to property in the jurisdiction of Spokane County. The comments below must be addressed before we can complete our review. General comments #1 and #2 are directed to the CSV, the rest to the applicant.

General comments:

1. As you noted in your comments, Spokane County as well as CSV concurrence is required on the CLOMR application. Please also note that Spokane County cannot concur with the CLOMR application until the issue of jurisdictional maintenance responsibility is determined per 44 CFR 65.10 (c) and 44 CFR 65.6 (a)(12). As a majority of the proposed plat/development is within the City of Spokane Valley we request that the CSV provide written assurance that they will assume jurisdictional responsibility of the O&M of the Gustin Levee/Ditch, Triangle Pond and South Collection Pond. Because the proposed HOA and residents are located in CSV, Spokane County would have to assess citizens within the CSV for the maintenance of flood control facilities

within our jurisdiction. Split charges and split responsibilities for plat stormwater and flood control facility maintenance inside and outside the CSV would be confusing and inefficient.

2. Regarding SEPA review and determination, as CSV is the lead on plat review and approval we assume that CSV will be lead agency for SEPA review and that the flood control facilities within unincorporated Spokane County will be included in the scope of that SEPA review. Please contact me to discuss if this is not the case.
3. Permitting: A Spokane County floodplain development permit and grading permit will be required prior to proposed levee and pond construction on lots within unincorporated Spokane County. This work therefore is subject to Spokane County Critical Areas review and may be subject to other State/Federal environmental permits due to potential wetland/stream impacts. We recommend that the applicant contact me to set up a "pre-application" conference for County related activities. Note that at the time of the CLOMR application SCE must be assured that the project will be able to obtain and meet the requirements of all agency permits.
4. A detailed Maintenance and Operation plan outlining maintenance responsibilities and funding mechanisms must be provided for all flood control facilities prior to Spokane County community concurrence on the CLOMR application.
5. At a minimum a written letter of understanding with facility property owners and any others impacted by the project is needed prior to concurrence with the CLOMR application. The Spokane County facilities outside the plat boundaries including the South Collection Pond, Triangle Pond, and Gustin Ditch and Levee will eventually need a permanent stormwater easement or tract granted by the owners of the affected parcels. This along with any necessary property owner BFE rise permissions are required prior to issuing the floodplain development permit.
6. Due to a lack of in-house expertise, SCE is considering hiring a consultant to perform a detailed HSPF model review of the next submittal. Please be sure that this next submittal includes all the necessary backup data to support that effort.
7. The official County Engineer's section map references a drainage easement dedication over the triangle property for CRP No. 1923. We have not located a copy of the easement and assuming at this point that the proposed additional use to intercept flood flows with the drywell farm is consistent with or at least not prohibited in some way by the easement in-place. However, this will need to be verified. Additional easement rights will need to be granted by the property owner of APN No. 45343.9052, if the existing easement does not grant rights for the proposed use outright or the easement is no longer in-place. (See enclosed section maps).
8. The Madison Road drainage especially from the south must be addressed in detail, including basin maps, to insure the adequacy of the drywells to handle the flow. A reference to an "email" from West Consultants in the Painted Hills Flood Control Development Narrative (pond infiltration report) is not sufficient.
9. We have concerns with shallow ground water in Boring #9 near Thorpe Road in July identified in the Geotechnical Evaluation Phase II Report and therefore with the efficacy of the proposed drywells and gravel galleries. Please address.
10. Subsurface infiltration estimates are extrapolations from point sampling. Based upon the scope and nature of the project, we believe it is important to do some full-scale testing of some representative and in-situ drywell and gravel gallery segment installations. Based upon the

FEMA and PRD review times involved this testing should be feasible and not be overly time disruptive.

11. Show proposed BFE's on plans.
12. Provide plans for Madison and Thorpe Road improvements.
13. More detailed plans/maps showing model cross section locations is needed.
14. Show jurisdictional boundaries (CSV/Spokane County) and all work sites on plans.
15. We are concerned with the use of Hydroflow software for infiltration pond modeling. Please confirm acceptability with FEMA. Also, hydrology should be consistent with HSPF model when determining elevations, especially with collection pond and culverts upstream of Thorpe Road.
16. "Painted Hills PRD Biological Evaluation, Buffer Averaging, and Habitat Management Plan" needs to include potential impact of proposed construction areas outside the plat area itself. Please amend this document to include the South Collection Pond, the Triangle Pond and the Gustin Ditch/Levee and any impacts under the Spokane County Critical Area Ordinance.
17. Provide consistency of the reach names as well as other design details in the Whipple Consulting Engineer reports and West Consultant reports.
18. Provide two paper copies of future submittals as well as an electronic copy that includes the hydraulic files for ease of review.

Plans:

1. FC4.0 – Label existing contours south of Thorpe Road.
2. FC4.2 – Design elevation of the top of the levee is unclear in plans and existing and proposed contours are unreadable. Please specify levee construction with more clarity and locate the BFE on plans and sections. Also, clarify any planned modifications to the Gustin Ditch. Is the ditch proposed to be 3 foot in width its entire length?
3. FC4.3 – What are the "future Thorpe Road improvements" shown in the South Collection Pond & North Forebay Pond Section? Provide details.
4. FC5.0 - Madison Road Plans - The Madison Road drainage plan will need to effectively distribute the basin flows involved thru the various cross-culverts and drywells that are planned. It's not obvious that the drywell with intakes planned along Madison have connectivity to the various collection point of runoff or shouldn't be extended further north along Madison. Therefore, the off-plat drainage basins between Madison Road and Horizon Hill Lane need to be defined and the peak flows estimated. At the south end of the area the Stormwater Utility mapping indicates an off-plat basin with forked gully's in the unincorporated County with the flow path crossing Madison Road approximately one block north of the Thorpe Road intersection. (See attached topo & stormwater maps).
5. FC5.0 – What is "future development" noted in the Madison Road cross sections? Provide details.
6. FC5.1 – The V-Ditch appears to be closer to 2:1 not 6:1 slope specified in note 6. Provide calculations of rock size for stability.
7. FC5.1 – This sheet currently shows the drywell lid elevation on the pond bottom for the triangle pond; lids should be raised slightly off the bottom to reduce potential contamination.
8. FC5.1 - Stability calculations on the weir north of Thorpe Road are needed.
9. FC5.1 - The south collection pond will need a maintenance access road off Thorpe Road for dredging and repair activities after a flood event. Also, this pond will serve as the primary

sediment pond, not the forebay storage cell on the north side of Thorpe Road. The current 1.38 foot deep sump zone seems adequate for the infrequent flood event involved. We are not seeing any inherent need to berm the collection pond, to be avoided if at all possible. Not clear from plans if this is the case.

CLOMR Application and Report:

1. A page outlining the files associated with the HEC-RAS projects, plans, geometries, reaches, and flows should be included in the report as each project appears to have numerous reaches within the plans associated with it and it is hard to understand which is which.
2. An explanation of the Manning's n-values used in the revised HEC-RAS sections should be included in the report.
3. Provide a more detailed explanation of the flows used in the proposed HEC-RAS model such as at which River Station the flows change.
4. Page 5 - The unnamed tributary 100-year flow on page 5 is noted as 20 cfs while on page 10 the 100-year flow is mentioned as 16 cfs as does Table 1 on page 15. HEC-RAS also shows the flow as 16 cfs. Please review.
5. Page 5 – Consider the previously un-mapped/un-modeled overflow of Chester Creek into the golf course overflow reach about 3000 feet south of Thorpe Road. This may increase the 100-year flow in the golf course overflow reach.
6. Figure 5 showing the golf course overflow facilities design drawing specifically the drywells along Madison Road don't match the locations or number of facilities of that of sheet FC5.0 of the construction plans.
7. Page 10 of the report notes that the Collection Pond south of Thorpe is 215 feet wide by 215 feet long. Please confirm this as the Collection Pond details on sheet FC5.1 of the construction plans are not shown to this dimension and clarify irregular shape in body of report. River Station 54 in the HEC-RAS model shows the Collection Pond bottom to be 110 feet which does not match the 215 feet as mentioned in the report. Please review.
8. Page 13 of the CLOMR Appendix notes the Highway 20 culvert crossing as the upstream limit. This should be Highway 27 culvert crossing.
9. Page 13 – Review of the final plat drainage plans is required prior to issuing a floodplain permit to insure there is no increase in runoff that would impact County properties or alternatively, CSV assurance that this is the case.
10. Page 15 under Site Investigation notes that Ken Puhn of WEST Consultants conducted a site visit on 12/18/2015. However, the year should most likely be 2014.
11. Figures 8 and 9 show the layout of the HEC-RAS cross-sections. However, the figures are hard to read and a scaled layout of the HEC-RAS sections with this information should be provided to allow for checking of the reach lengths, cross-section lengths, etc. All cross-sections should be shown and labeled.
12. Page 20 - Explain model result differences in DEM and CEM.
13. Check the weir data in the proposed HEC-RAS files as the width and length don't match construction sheet FC5.1.
14. MT-2 Form, page 2 – Please use the most current available LIDAR contours for modeling, not 2003 which we assume were used in the original FEMA model.

15. MT-2 Form, page 3 - Include proposed unincorporated Spokane County facility areas in ESA documentation.
16. The Riverine Structures form needs to include all structures, including levees and weirs not just the Thorpe Road culverts.
17. It appears that the proposed map revision will include the entire current Storage Area 1 as a Shaded X zone. Please explain in the report the rationale for this.

Thank you for allowing us to review this submittal. If you have any questions, please don't hesitate to contact me at 477-7443 or mbarrentine@spokanecounty.org. We are also available to meet with either CSV staff and/or Developer engineering staff to discuss these comments further.











Sincerely,



Marianne Barrentine, PE, CFM
Environmental Programs Manager

Email copies:

Todd Whipple, Whipple Consulting Engineers, Inc.
Ken Puhn, West Consultants
Paul Nelson, IPEC
Gabe Gallinger, CSV
Deanna Horton, CSV
Carrie Koudelka, CSV
Mitch Reister, SCE
Chad Coles, SCE
Matt Zarecor, SCE
Gary Nyberg, SCE
Jane Clark, SCE

-  Type A Drainage Systems
-  Type B Drainage Systems
-  Type A + DNR Streams
-  Type B + DNR Streams
-  DNR Streams
-  5 ft Contours
-  40 ft Contour Index
-  Min Contour (2015ft)
-  Max Contour (2640ft)
-  Municipal Boundary







Map 4403

Township 24 North
Range 44 East
Section 03
Stormwater Facilities
Natural Location of Drainage Systems



Inventoried in 1995, 1996, 2001, 2008

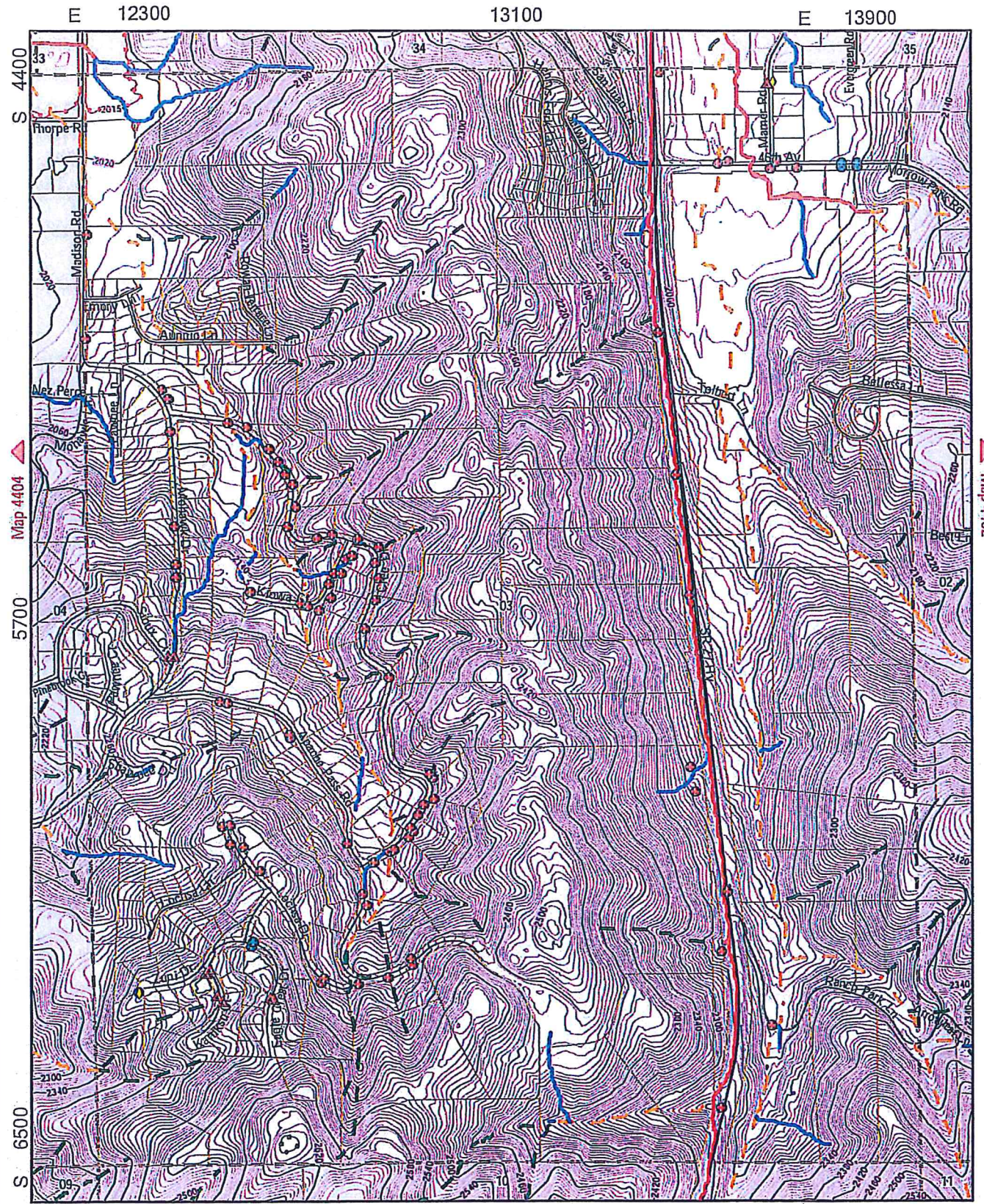
-  Drywell Qty. - 9
-  Dry+Culverts Qty. - 2
-  Culverts Qty. - 80
-  Catch+Culverts Qty. - 7

98 Facilities in Section

Stormwater Facility Inventory

 N/A

Stormwater 2002 Contours



 Map 4410

min elevation 2015 max elevation 2640

Revision date: 6/2/2011 WFG

** See disclaimer on page 1 **

- Type A Drainage Systems
- Type B Drainage Systems
- Type A + DNR Streams
- Type B + DNR Streams
- DNR Streams
- 5 ft Contours
- 40 ft Contour Index
- Min Contour (2010ft)
- Max Contour (2440ft)
- Municipal Boundary
- Wetlands



Map 4404

Township 24 North
Range 44 East
Section 04
Stormwater Facilities
Natural Location of Drainage Systems



Inventoried in 1995, 2001, 2003, 2006, 2008

- Drywell Qty. - 7
- Dry+ Culverts Qty. - 2
- Culverts Qty. - 36
- Catch+ Culverts Qty. - 30
- Swales Qty. - 7
- Drywells Pretreated Qty. - 3
- Fire Station

85 Facilities in Section

Stormwater Facility Inventory

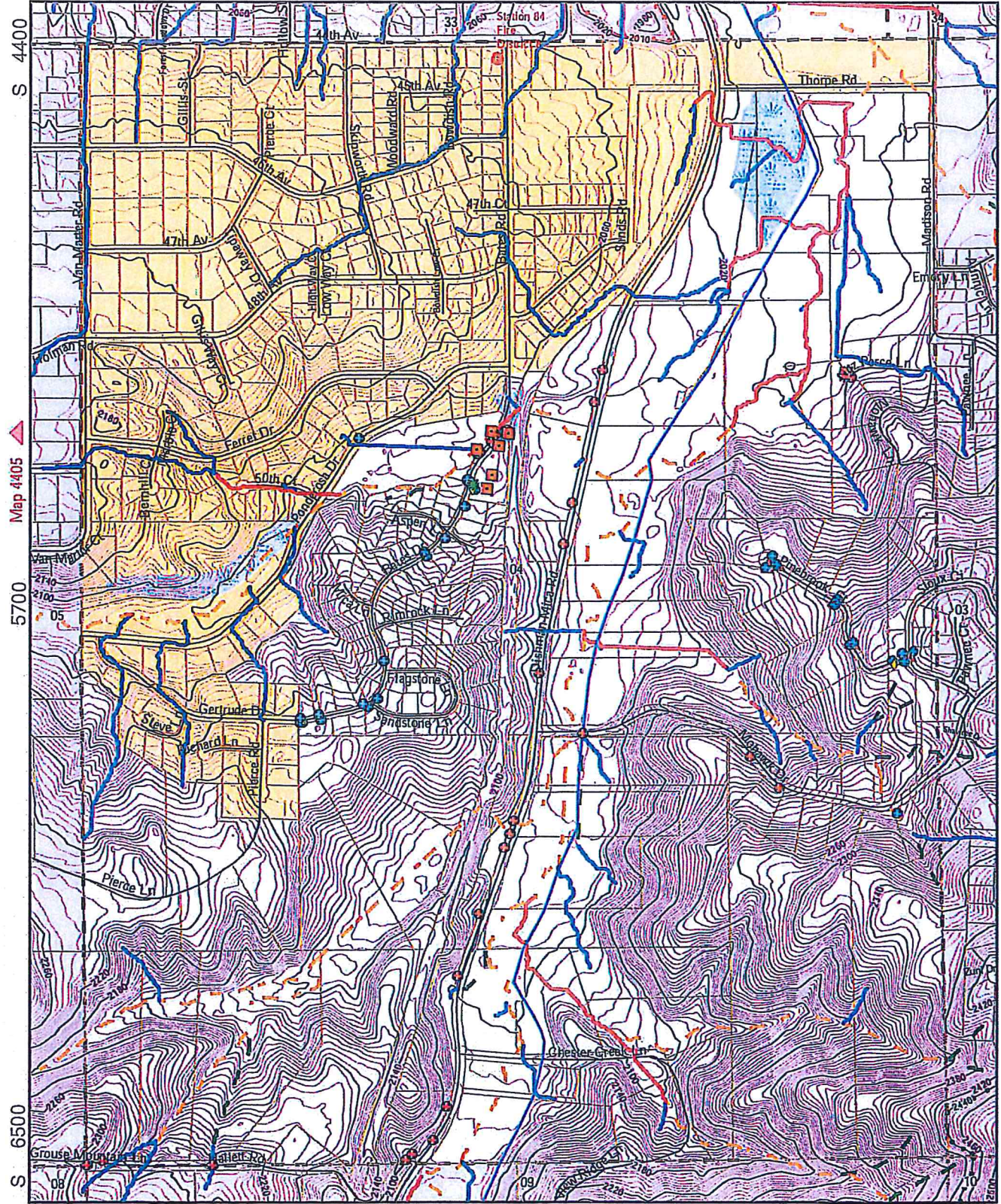
▲ N/A

Stormwater 2002 Contours

E 10700

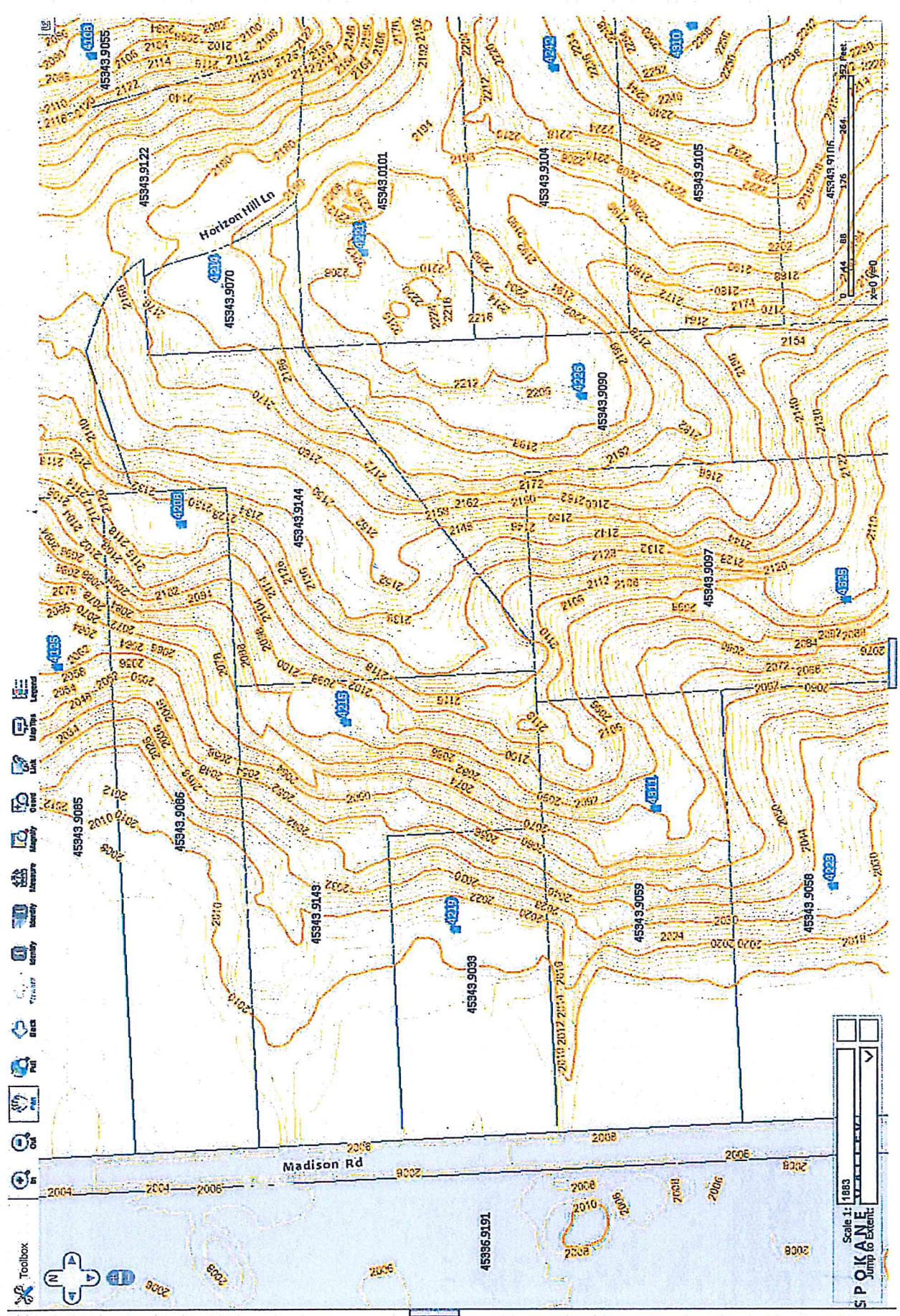
11500

E 12300

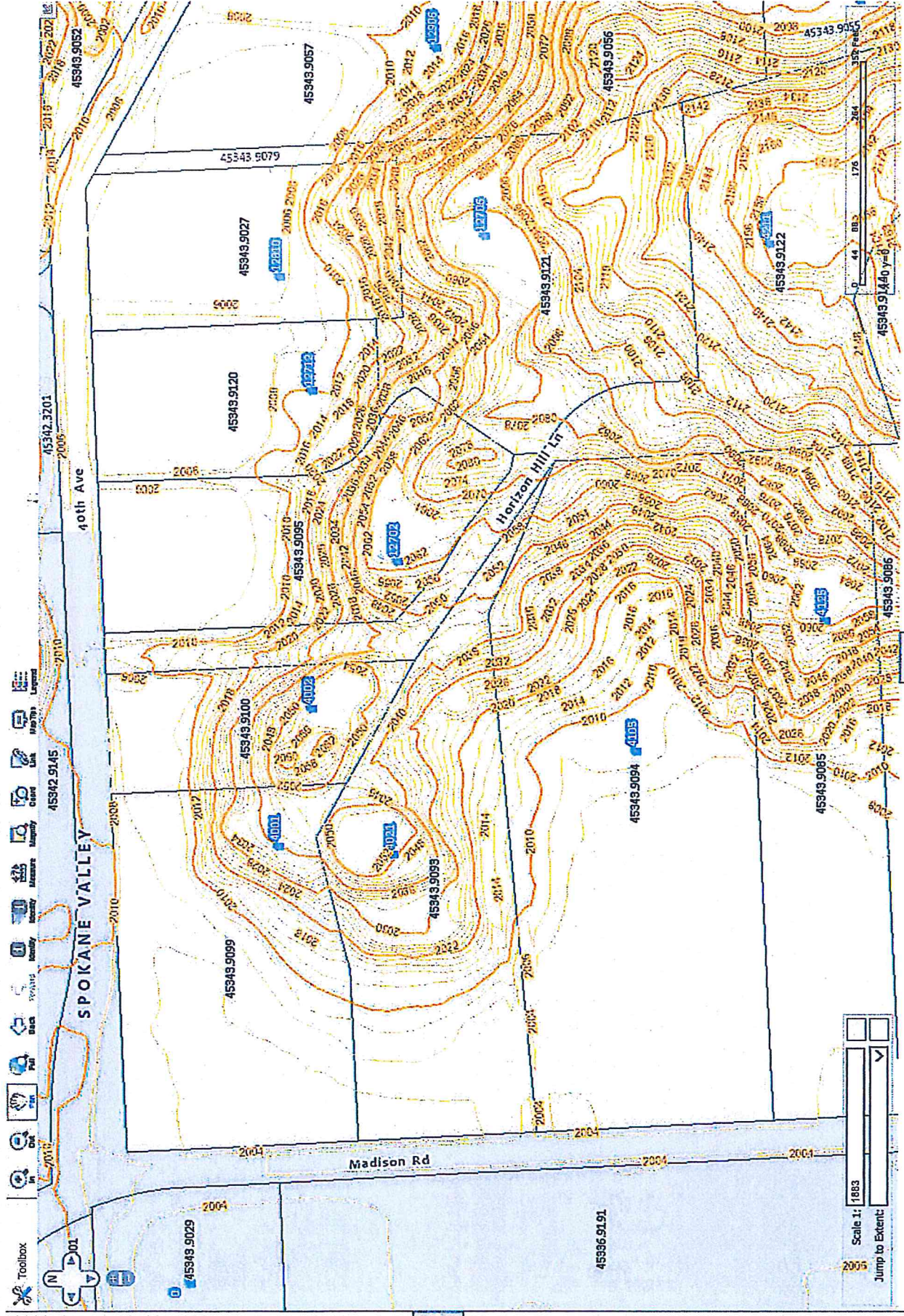


▼ Map 4409

** See disclaimer on page 1 **

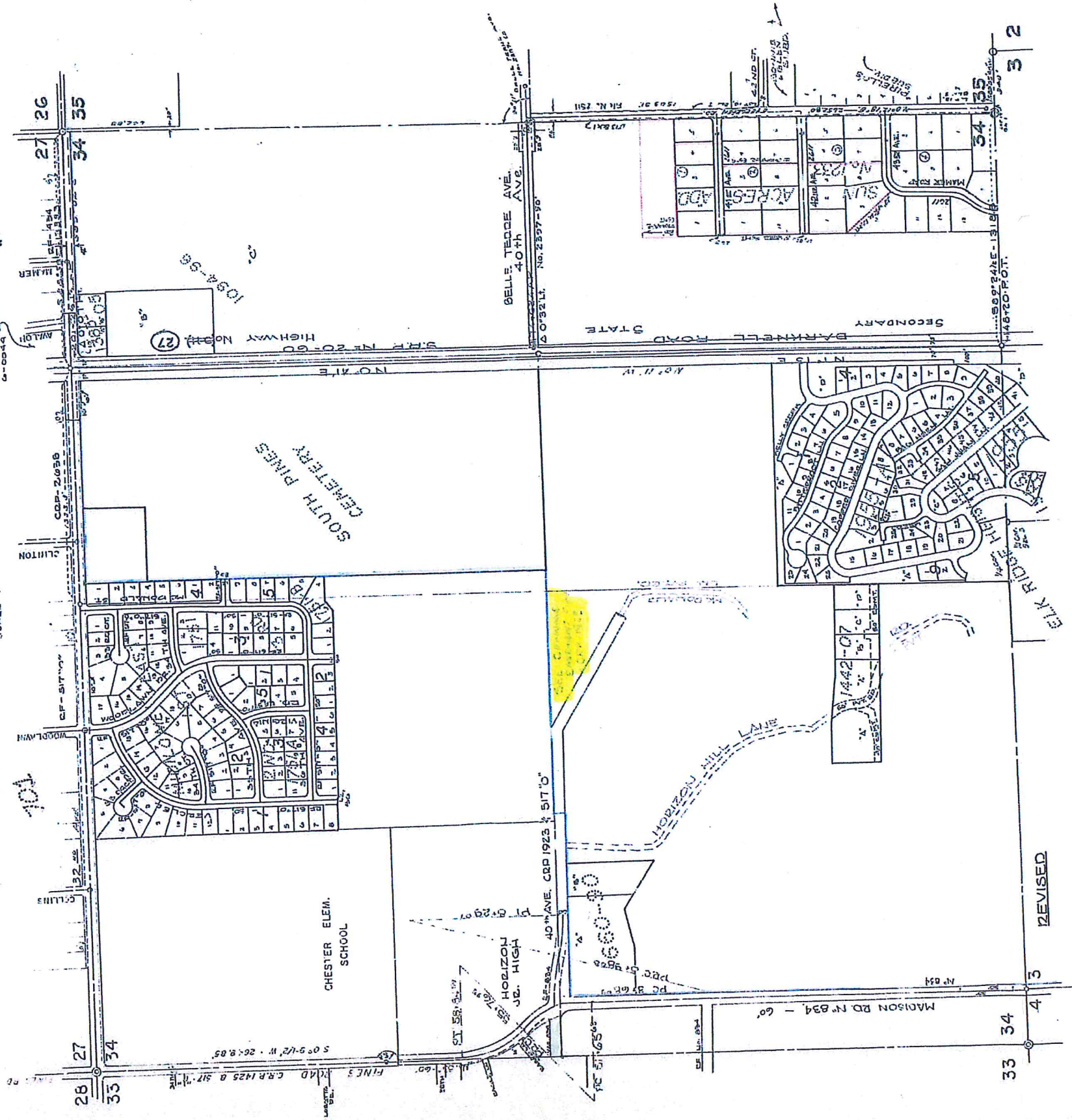


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S P O K A N E
Jump to Extent



SEC. 34 T 25 N.R. 44 EMM.

SCALE: 1" = 400'

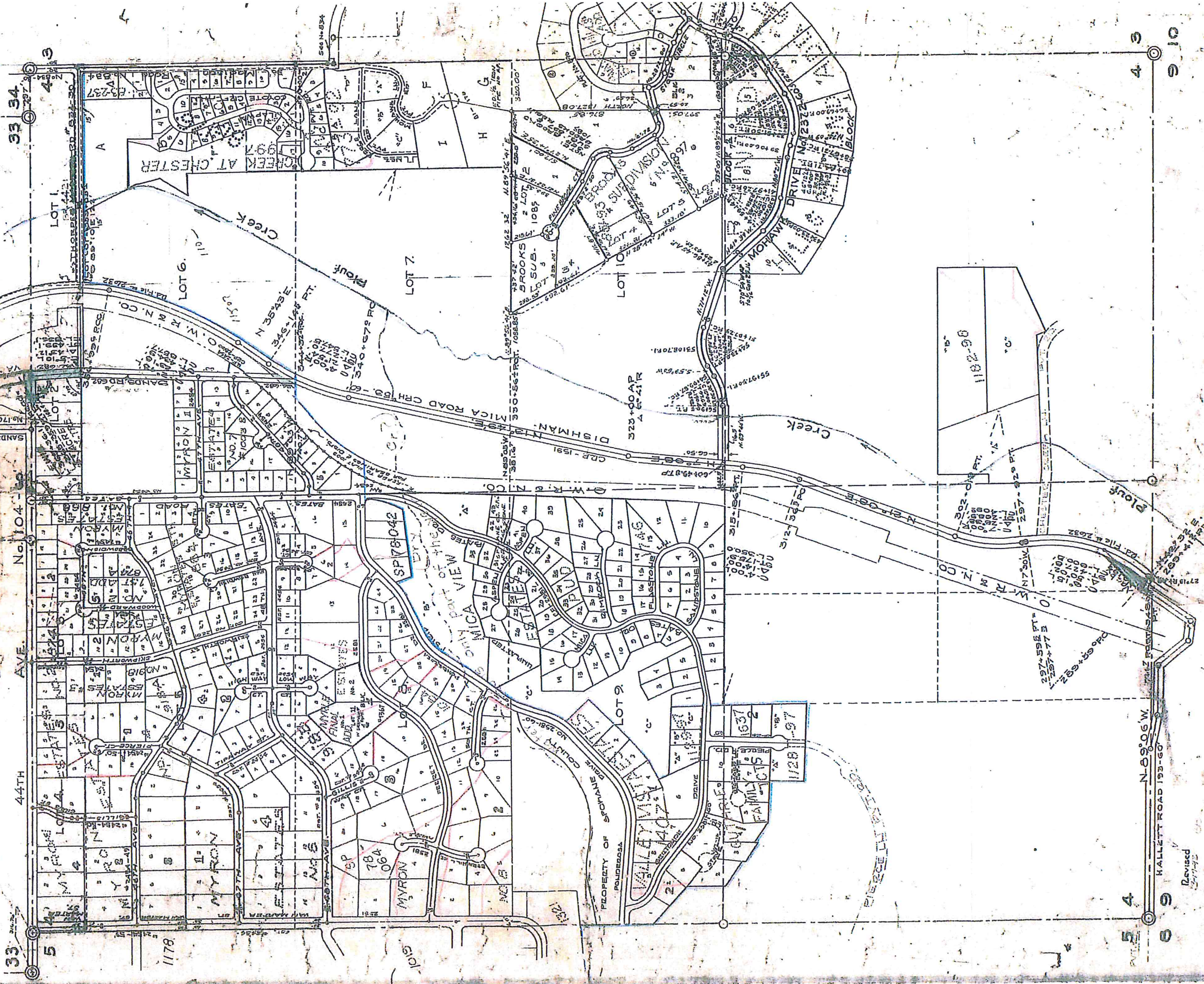


REVISED

DATE	DESCRIPTION	BY
6-15-72	THIS SECTION REPRODUCED FROM LINEN TO MYLAR.	G. ROY

SECTION 24 T24N R14E M1M

OFFICIAL PLAT.
A. P. SCOTT-ENGINEER-SPOKANE COUNTY.
By: Principal Assistant.



44TH AVE. No. 104-60

33 34

33

5 4

N. 89° 06' W.
HALLETT ROAD 193-60

4 5

Revised
2-11-12

9 10