

Technical Memo

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Date: May 14, 2013
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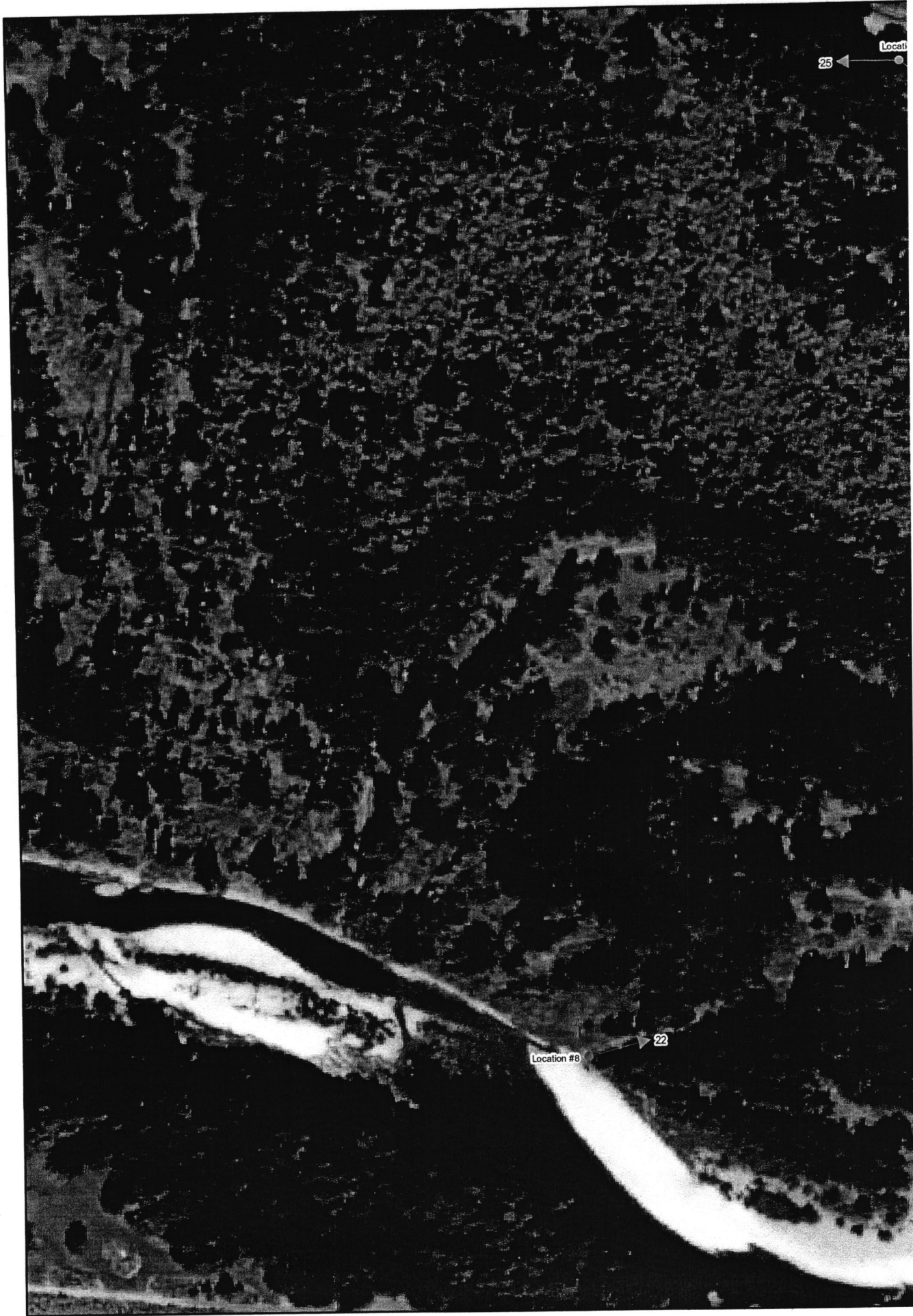
Expires 12/5/14

Subject: MEM-07 Monitoring Report – March 28, 2013 Field Reconnaissance

WEST Consultants conducted the third annual field reconnaissance of the East Fork Lewis River in the vicinity of the Daybreak Mine as required under MEM-07 of the Habitat Conservation Plan. The reconnaissance was conducted by Hans R. Hadley P.E. and Thomas R. Grindeland P.E. on March 28, 2013. Observations of the river and floodplain were made to determine the likelihood of the river avulsing into the existing Daybreak ponds. This memo documents the results of that field reconnaissance. The highest discharge that occurred during winter 2012/2013 was 7,570 cfs which occurred on November 19, 2012. This is less than a 2-year recurrence interval peak discharge. Photographs of current conditions were taken at identical locations to those taken in November 2011 and utilize the same location number and photo number. The photograph locations are shown on an aerial photo base map (Appendix A) from August 2011. Arrows are depicted on the map to indicate the direction in which each photo was taken. A corresponding photographic log is provided in Appendix B.

Currently, there are no indications to suggest that the East Fork Lewis River poses a near term avulsion threat to the Daybreak Ponds. The main channel is generally located along the southern portion of the valley with large areas of floodplain separating the channel from the Daybreak Ponds. However, observations do suggest that several small secondary channels are continuing to develop in the floodplain between the main channel and Storedahl Pit Road. At Location #1, the existing headcut does not appear to have migrated any further upstream from its observed location in November 2011 (see Photo 3). However, the surface of the pathway, located just upstream from the headcut, appears to be composed of gravels and cobbles. In previous visits, the pathway was composed of finer grained material. This suggests that overbank flows have washed away the fine grained surface material. This secondary channel could pose an avulsion threat in the future and will be monitored for changes in size and extent during subsequent field reconnaissance work.

Appendix A: Base Map

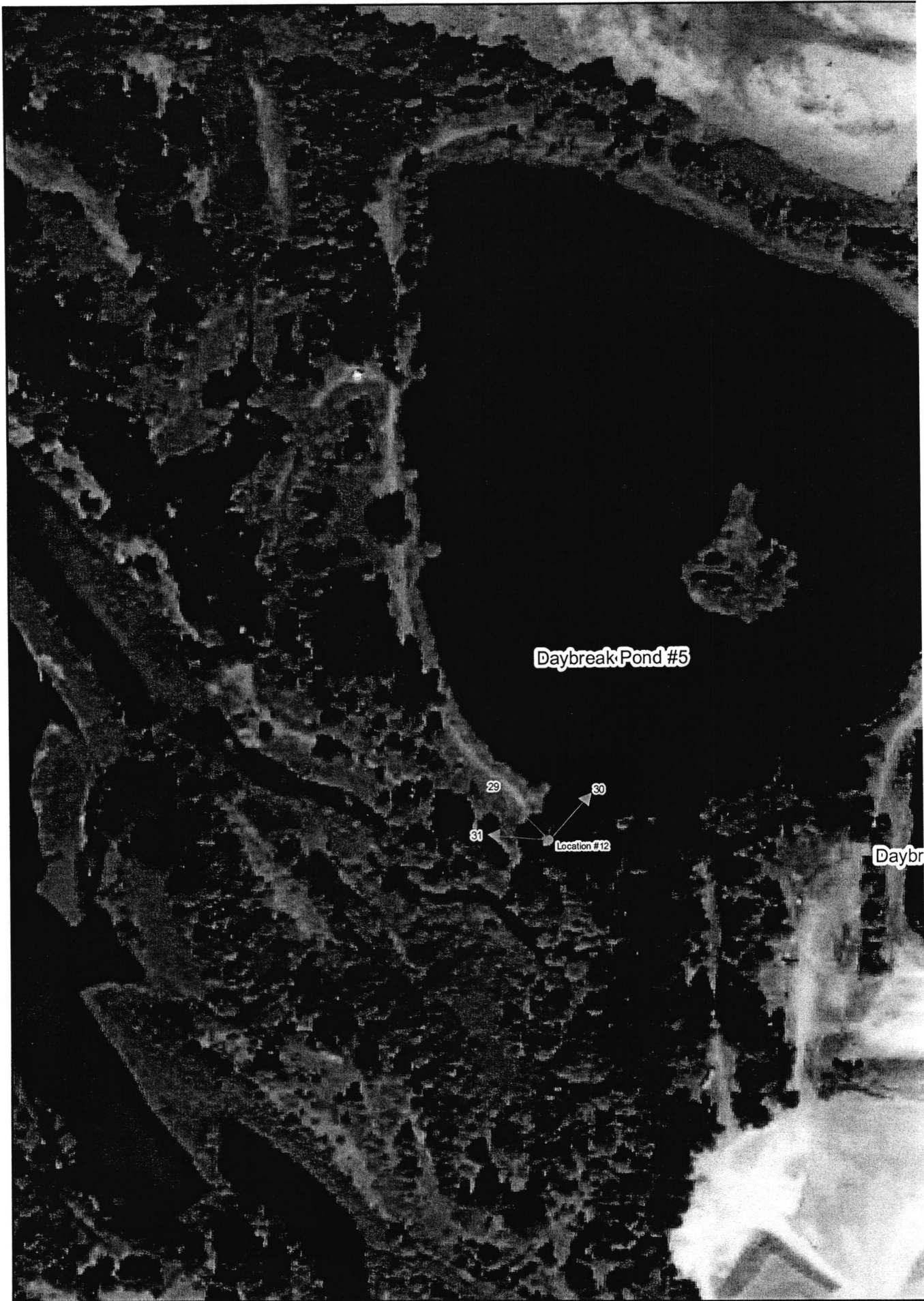


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Photographic Log Base Map - March 28, 2013

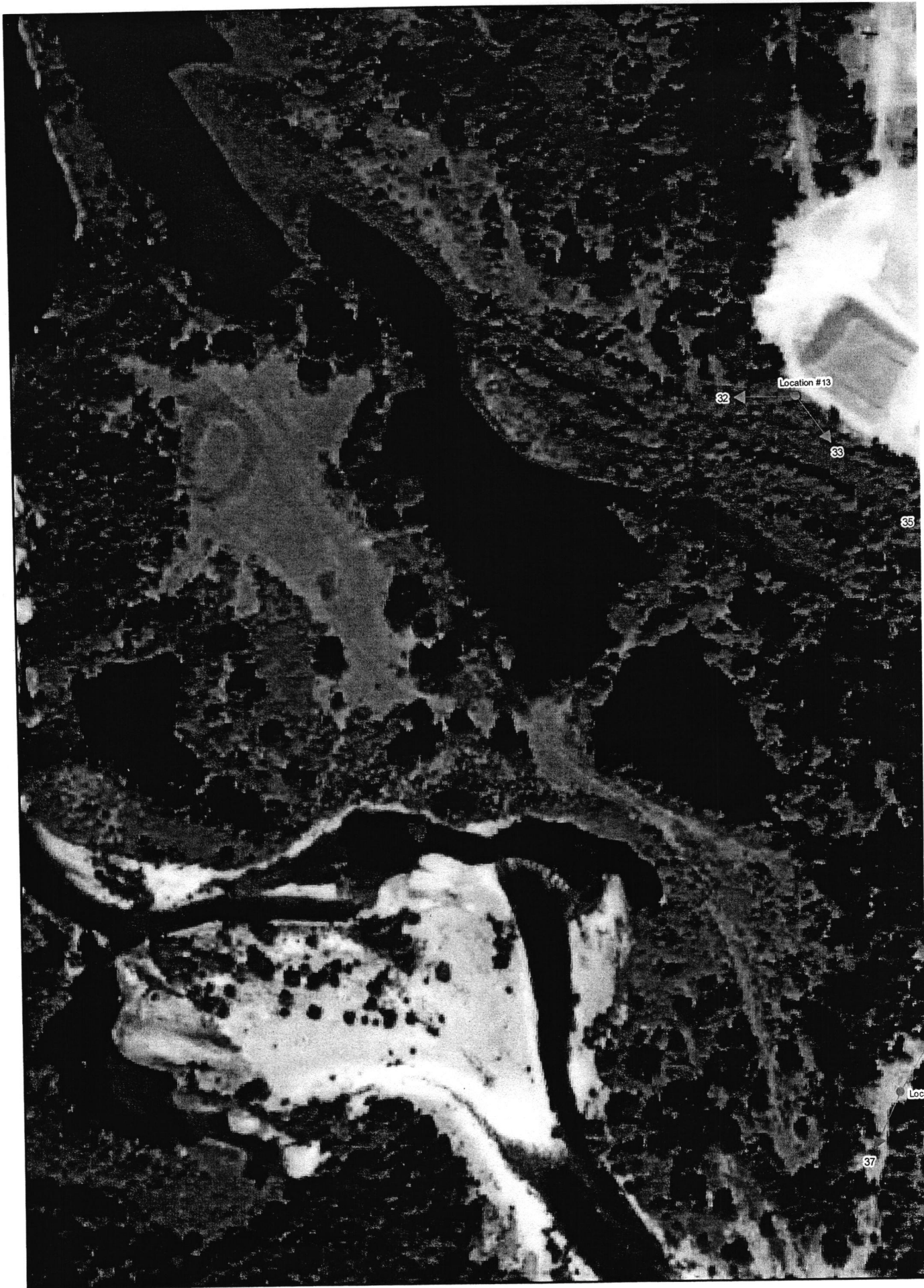


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Photographic Log Base Map - March 28, 2013



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Appendix B. Photographic Log



Photo 1. Looking northwest from Location #1 along secondary floodplain channel.



Photo 2. Looking southwest from Location #1 at headcut nick point located at upstream end of secondary floodplain channel.



Photo 3. Looking south southeast from Location #1 toward County Pond #2.



Photo 4. Looking southeast from Location #2 at overflow path from County Pond #2.



Photo 5. Looking northwest from Location #3 at overflow channel into County Pond #1.



Photo 6. Looking southwest from Location #3 at headcut nick point located at upstream end of overflow channel into County Pond #1.



Photo 7. Looking north from Location #4 at overflow channel from E.F. Lewis River into County Pond #2.



Photo 8. Looking south from Location #4 at upstream end of overflow channel from E.F. Lewis River into County Pond #2. Recently abandoned E.F. Lewis River channel in background.



Photo 9A. Looking northeast northeast from Location #5A at right bank of recently abandoned section of E.F. Lewis River at location of overflow channel that leads to County Pond #2.



Photo 10A. Looking northwest from Location #5A at upstream end of secondary channel.



Photo 11A. Looking south from Location #5A at downstream end of recently abandoned section of E.F. Lewis River.



Photo 12A. Looking east southeast from Location #5A at downstream end of second E.F. Lewis meander cutoff channel.



Photo 18. Looking west from Location #6 at upstream end of secondary floodplain channel.



Photo 19. Looking north northeast from Location #6 at rock vane located along the right bank of recently abandoned section of E.F. Lewis River.



Photo 20. Looking southeast from Location #6 at downstream end of recently abandoned section of E.F. Lewis River. Note first cutoff channel at left side of photo.



Photo 20A. Looking east northeast from Location #6 at downstream end of second E.F. Lewis River meander cutoff channel.



Photo 21. Looking northwest from Location #7 at upstream end of secondary floodplain channel.



Photo 21A. Looking east southeast from Location #7 at downstream end of first E.F. Lewis River meander cutoff channel.



Photo 22. Looking east northeast from Location #8 at downstream end of secondary floodplain channel.



Photo 23. Looking southeast from Location #9 in direction of floodplain overflow channel shown in Photo 1.



Photo 24. Looking southeast from Location #10 at floodplain adjacent to Storedahl Pit Road. Historic location of E.F. Lewis River channel.



Photo 25. Looking west from Location #10 at floodplain adjacent to Storedahl Pit Road. Historic location of E.F. Lewis River channel.



Photo 26. Looking southeast from Location #11 at floodplain adjacent to Storedahl Pit Road. Historic location of E.F. Lewis River channel.



Photo 27. Looking south from Location #11 at floodplain adjacent to Storedahl Pit Road. Historic location of E.F. Lewis River channel.



Photo 28. Looking west southwest from Location #11 at floodplain adjacent to Storedahl Pit Road. Historic location of E.F. Lewis River channel.



Photo 29. Looking northwest from Location #12 at Daybreak Pond #5 overflow into E.F. Lewis River floodplain.



Photo 30. Looking northeast from Location # 12 at Daybreak Pond #5.



Photo 31. Looking west northwest from Location #12 at E.F. Lewis River floodplain.



Photo 32. Looking west from Location #13 at E.F. Lewis River floodplain.



Photo 33. Looking southeast from Location #13 at E.F. Lewis River floodplain.



Photo 34. Looking south southeast from Location #14 at historic E.F. Lewis River channel.



Photo 35. Looking west from Location #14 at historic E.F. Lewis River channel.



Photo 36. Looking north northeast from Location # 15 along alignment of historic E.F. Lewis River channel.



Photo 37. Looking south southwest from Location #15 along alignment of historic E.F. Lewis River channel.



Photo 38. Looking east southeast from Location #16 at E. F. Lewis River floodplain. Historic location of E.F. Lewis River channel.



Photo 39. Looking west southwest from Location #16 at E.F. Lewis River floodplain. Historic location of E.F. Lewis River channel.