

**OSE Review of Ponds Surveyed by Keller Bliesner Engineering
For the United States Department of the Interior, Bureau of Indian Affairs
On the Navajo Indian Reservation**

Prepared for:

State of New Mexico
Office of the State Engineer
Santa Fe, New Mexico

By:

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March 23, 2012

This report was made to review the surface areas of irrigation and livestock reservoirs identified in “The United States Hydrographic Survey of Navajo Lands in the San Juan River Basin” dated December 29, 2010 (Table F-3 in Appendix F, and Table M-3 in Appendix M) and further explained in a report by Keller-Bliesner Engineering (KBE) titled “San Juan Stream System Navajo Water Use Report on Impoundments, Wells and Springs” (dated January 12, 2012). The Office of the State Engineer (OSE) Hydrographic Survey and Mapping Bureau reviewed all of the reservoirs that were claimed to be 6.00 acres and larger in surface area and a randomly selected sample of reservoirs that were claimed to be less than 6.00 acres in surface area.

The United States provided the State of New Mexico Geographic Information System (GIS) data in ESRI geodatabase format of the reservoirs they surveyed on DVDs in July 2011. That data was used to identify the location of the claimed reservoirs. For the most part, the OSE used statewide imagery acquired in 1996, 2005 and 2009 to interpret and measure the sizes of the reservoirs. All of that imagery was 1 meter in pixel size and can be acquired at the University of New Mexico Resource Geographic Information System (RGIS) Program website <http://rgis.unm.edu/>. The OSE also reviewed and compared the United States’ mapped reservoir perimeters to the reservoir perimeters as they were shown on digital versions of the USGS Quadrangle maps (also called Digital Raster Graphics or DRG). In some cases the OSE also compared the reservoir perimeters to historic imagery provided by the United States on the DVDs noted above and to the most recent 2011 1-meter pixel statewide imagery that is just now becoming available at the RGIS.

For the purposes of this report, the size of a reservoir is determined by the amount of water that the reservoir can be interpreted to have actually ponded or filled with. Indications of ponding can be furnished by actually seeing the ponding of water on the imagery, meaning that the reservoir held water at the time of the imagery, or by indications that the reservoir may have held water in the past, though it did not pond water at the time of the imagery. Indications of past ponding of water that can be visible on the imagery would include sedimentation that would occur from standing or ponding water, signs on the imagery that could indicate banks or shore line, and patterns of vegetation.

Sometimes the exact outline of the reservoir may be indistinct or unclear and the outline of the reservoir may be open to further interpretation. The OSE was not able to do any field work for this report and so could not collect additional data that could be used to clarify the indistinct interpretations. In these cases, the OSE would refer to digital versions of the USGS Quadrangle maps and the historic imagery from years prior to 1996 that was provided to the OSE by the United States on DVDs that was

referred to above. This historic imagery was used by the United States to map irrigated lands and not reservoir areas and so did not cover many of the geographic areas that included reservoirs.

It is not the intent of this report to review all the data on all of the reservoirs. That would involve much more time than was available for this review. The data generated by this review was used by John Whipple, consultant to the State of New Mexico, in his review of reservoir sizes and evaporation depletions associated with Navajo reservoir storage in the drainages of ephemeral tributaries to the San Juan River. His use of the data is more fully explained in his report to which this review is appended.

Attached to this report are two tables. Table 1 includes the ponds that are 6.00 acres in surface area and larger. Table 2 lists the 146 ponds that are less than 6.00 acres. The tables give the KBE pond ID which corresponds to the Impoundment Site Number listed in Table F-3 or Table M-3 noted above, the KBE measured surface area in acres, the OSE interpreted surface area in acres, and a comment field that notes some additional information about the OSE analysis.

Also attached to this report are maps of individual ponds overlaid on either different years of imagery or the USGS 1:24K Quadrangle maps to illustrate some of the OSE's findings. It was impractical to give maps for all of the ponds for all of the years and so only a sample is given. The maps are divided into 4 sections. The first section is maps of ponds mapped by KBE for which the OSE could not find any indications of ponding on any year of imagery or on the USGS 1:24K Quad maps. The second section is of ponds mapped by KBE for which the OSE could not find any indication of ponding on the imagery, but the ponds were shown on the USGS 1:24 Quadrangle maps. The third is for ponds mapped by KBE for which the OSE could find consistent indications and/or ponding in all years of the imagery reviewed and often on the USGS Quadrangle map. The fourth section is of ponds mapped by KBE for which the OSE found inconsistent indications and/or ponding in which case the OSE would use the year with the clearest or most convincing indication of ponding.

Table 1. Review of ponds more than 6.00 ac. in surface area

3/21/2012

KBE Pond ID	Comments	KBE acreage	OSE acreage
P-0016	Consistent indications on all years of imagery. Matches KBE. Similar on DRG, Juan's Lake	388.41	376.06
P-0018	Indistinct indications on imagery when compared to DRG. Erosion in every year, no indication of any sedimentation. Larger on DRG. Drew based on DRG.	9.49	14.40
P-0027	Indications and ponding on 96 & 05. Not on DRG	47.02	12.55
P-0033	Consistent but faint indications of ponding on all years of imagery. Not on DRG	31.37	1.19
P-0034	Placeholder only, no ponding in any year, breached in every year of imagery. Erosion in every year, no indication of any sedimentation. Not on DRG. Pond below it holds water, but is off Navajo lands.	10.41	0.62
P-0035	Ponding on 96-05, none on 09. larger pond on DRG.	7.11	2.24
P-0036	Ponding on 96 & 05 imagery, larger on DRG and on 1975 imagery. Captain Tom Reservoir. Drew based on additional ponding on 1975 imagery	97.57	50.15
P-0038	Consistent Indications of ponding on all years that matches DRG	30.20	2.97
P-0039	Consistent Indications on 96-05-09 imagery - Pond is on the DRG and matches indications on the 1975 imagery. Drew based on DRG/1975.	57.94	30.19
P-0040	Place holder only - no indications on any year of imagery. Breached on all imagery. Mapped based on DRG.	24.47	18.44
P-0041	Consistent ponding and indications on all years, matches KBE and DRG	28.39	27.30
P-0042	Consistent ponding on all years of imagery, Long Lake, smaller on DRG, Matches closely to KBE	300.48	258.42
P-0043	Consistent ponding on all years of imagery, largest in 96, Smaller on DRG, Whiskey Lake	223.59	208.87
P-0142	Consistent faint indications on all years of imagery, larger pond on DRG, may be collector,	9.23	4.75
P-0160	Ponding on all years and DRG, largest on 2005. Close match to KBE pond.	6.54	5.74
P-0178	Consistent indications in all years of imagery, larger on DRG	17.19	7.72
P-0187	Indistinct indications on imagery when compared to DRG. Erosion in every year, indistinct indication of sedimentation. Drew pond based on DRG.	9.12	7.67
P-0188	Consistent indications on all years of imagery and DRG.	23.86	0.96
P-0190	Consistent but indistinct indications on all years of imagery. Smaller pond on DRG, may be collector	8.49	3.26

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KBE Pond ID	Comments	KBE acreage	OSE acreage
P-0192	Place holder only, faint and indistinct indications on all years of imagery. May be collector. Not on DRG. Rechecked and kept initial conclusion.	8.52	0.00
P-0202	Ponding and indications on all years of imagery. Smaller pond shown on DRG.	22.43	17.37
P-0207	Consistent ponding on all years of imagery. May be collector for P-0194.	6.56	1.27
P-0225	Ponding on 05, smaller indications on 96-09, not on DRG, may be collector	7.96	5.74
P-0226	Consistent Indications of ponding on all years, most on 2005 imagery, Larger on DRG	80.39	53.62
P-0227	Indications and ponding on 05. Not on DRG	16.64	8.24
P-0228	Ponding on 05, smaller ponding on 96, 09 & DRG	47.47	34.75
P-0230	Consistent indications on all years of imagery. Larger on DRG	18.24	9.63
P-0233	Consistent but indistinct indications on all years of imagery, Berm only on DRG	8.49	0.71
P-0234	Consistent indications of ponding on all years of imagery. Smaller on DRG. Channels across much of area. Breached on all imagery.	25.45	1.26
P-0238	Indistinct indications on imagery when compared to DRG. Erosion in every year, indistinct indication of sedimentation. Drew pond based on DRG.	7.93	2.73
P-0247	Consistent Indications on all years of imagery - very close to KBE- DRG shows similar	41.28	35.21
P-0251	Indications and small ponding on 96 & 05, smaller on DRG.	15.49	3.15
P-0257	No indications on any year of imagery. Erosion in every year, no indication of any sedimentation. Drew pond based on DRG.	23.37	5.62
P-0263	Consistent indications on 05-09, Berm only on DRG	11.50	0.47
P-0287	Consistent indications on all years of imagery, Smaller on DRG.	7.86	1.40
P-0288	Ponding on 96-05, smaller in 09. DRG pond is to north and not claimed.	9.85	9.15
P-0293	Consistent ponding on all years of imagery, larger on DRG	7.16	1.70
P-0295	Consistent indications or ponding on all years of imagery, smaller pond on DRG.	9.65	2.03
P-0304	Ponding on 96, appears breached in 05-09. Smaller on DRG.	9.10	5.35
P-0313	No indications on any year of imagery. Erosion in every year, no indication of any sedimentation. Drew pond based on DRG.	11.76	0.53
P-0328	Consistent indications on all years of imagery & DRG. May be collector.	7.44	4.83
P-0332	Consistent ponding on all years of imagery, smaller on DRG.	11.01	2.49

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KBE Pond ID	Comments	KBE acreage	OSE acreage
P-0336	Consistent indications on all years of imagery. Smaller on DRG	18.04	4.66
P-0342	Consistent ponding on all years of imagery. Larger on DRG	6.47	0.74
P-0424	Consistent indications on 05, 09 imagery. Smaller on DRG	6.38	0.75
P-0465	Ponding on 2005, indications on 96, 09, smaller on DRG, may be DRG	17.10	1.44
P-0468	Consistent ponding and indications in all imagery, larger on DRG, may actually be collector. (actual ponding is very small)	37.68	13.70
P-0470	Consistent indications of ponding in every year of imagery. DRG bigger.	23.89	13.48
P-0472	Consistent Indications of ponding on all years	32.71	7.55
P-0488	Consistent indications, no ponding. Also smaller on DRG	6.94	1.18
P-0491	Ponding on 96-05, none on 09, larger on DRG than OSE, smaller than KBE, may be collector	16.56	1.32
P-0494	No indications of ponding or sedimentation on any year imagery. Drew pond based on structure of berm. Not on DRG	6.97	0.30
P-0495	No indications of ponding or sedimentation on any year of imagery. Drew pond based on depression along berm. Erosion in all years of imagery.- Larger pond shown on DRG	46.91	4.17
P-0496	Ponding on 1996, no indications on 2005-2009 - DRG matches 1996	24.44	1.51
P-0503	Consistent ponding or indications on all years of imagery, similar on DRG	14.78	1.46
P-0505	Place holder only, no ponding or indications on any year of imagery. Erosion in every year, no indication of any sedimentation. Berm only on DRG	8.85	0.00
P-0506	Consistent indications on all years of imagery, best on 96-05. Larger on DRG	6.11	2.37
P-0511	Consistent indications on all years of imagery, Depression only on DRG (could be smaller)	11.45	7.92
P-0514	Consistent ponding and indications on all imagery. May be collector, berm only shown on DRG.	7.68	1.29
P-0525	Consistent Indications on all years of imagery - DRG shows smaller than OSE	42.89	17.18
P-0567	Indications on 09 imagery, may be collector. Not on DRG	8.51	1.10
P-0569	Indications 05, 09, smaller on 96, not on DRG, may be collector	7.98	2.91
P-0604	Indications on 96 imagery only. Smaller on DRG. May be collector.	23.80	0.31
P-0612	Ponding on 96-05, also smaller on DRG	6.37	0.37
P-0621	Consistent ponding on 96 & 05 imagery, smaller on DRG	7.18	1.43
P-0628	Consistent ponding. Smaller on DRG	17.58	10.56

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KBE Pond ID	Comments	KBE acreage	OSE acreage
P-0646	Ponding on all years, largest in 1996, not on DRG	6.89	2.40
P-0740	Consistent indications and ponding in every year of imagery and DRG.	10.34	0.67
P-0808	Place holder only, no indications on any year of imagery. Appears to be stream channel. No pond shown on DRG. Rechecked and kept initial conclusion.	6.76	0.00
P-0810	Consistent indications on all years of imagery, smaller on DRG	12.03	1.26
P-0814	Place holder only. Pond lies on crop circle, NIIP-7151 . Pond shown on DRG (same issue with P-0816)	7.63	0.00
P-0862	Ponding on 96 - indications on 05 - 09. Matches DRG	14.18	13.23
P-0873	Ponding and indications in 96 & 05, similar pond on DRG.	8.98	3.83
P-0876	Ponding on 05, 09, smaller on DRG	13.22	7.03
P-0877	Consistent indications on all years, similar to DRG	8.52	2.05
P-0887	Ponding on 2005 imagery, close match to KBE and DRG	18.77	18.79
P-0893	Consistent ponding on all years of imagery. Also smaller on DRG, may be collector	6.94	1.38
P-0898	Consistent ponding or indications on all years of imagery, smaller on DRG	8.54	2.32
P-0910	Consistent ponding or indications on all years of imagery, similar on DRG	7.71	0.59
P-0915	Ponding on 96 - indications on 05 - 09. DRG is larger - Fence Lake	14.13	12.50
P-0921	Consistent indications on all years of imagery, similar on DRG	10.60	3.26
P-0924	Consistent ponding on all years of imagery, largest on 96, smaller on DRG	7.13	7.35
P-0943	Consistent indications, some ponding in 1996. Similar on DRG.	17.73	7.48
P-0967	Smaller ponding on all years and DRG, larger indications.	6.44	2.59
P-0980	No indications on any year of imagery. Erosion in every year, no indication of any sedimentation. Drew pond based on DRG.	7.64	4.66
P-0985	Indistinct indications of sedimentation, but also erosion on every year of imagery. Drew pond based on DRG	7.06	2.96
P-0986	Place holder only, no indications on any year of imagery. Erosion in every year, no indication of any sedimentation. Berm only on DRG. Rechecked and kept initial conclusion.	87.96	0.49
P-0988	Consistent ponding and Indications on all years of imagery, matches KBE	74.69	67.85
P-0992	Consistent ponding and indications on all years, matches KBE closely, DRG is larger	35.07	33.34
P-0993	Consistent indications on all years of imagery and DRG.	12.03	2.92

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KBE Pond ID	Comments	KBE acreage	OSE acreage
P-1012	Consistent ponding on all years of imagery, matches DRG	13.68	2.40
P-1031	Ponding on 1996, very small ponding, but excavation visible on 2005-2009. Larger pond on DRG	23.45	8.40
P-1054	Ponding on 1996 and consistent indications on 2005 & 2009	18.70	7.65
P-1060	Consistent Indications of ponding on all years. Mapped to larger extent than ponding, used topo.	25.97	7.43
P-1087	Consistent ponding on all years of imagery and DRG, matches KBE	14.78	14.75
P-1092	Consistent indication of ponding on all years of imagery - 1975 is close to DRG and KBE - Little White Cone Lake	40.29	34.39
P-1099	Place holder only, no ponding or indications in any year, Pond is larger on DRG than KBE and overlaps FID 87 (Floodwater). Should discuss	7.77	0.00
P-1108	Consistent ponding on all years of imagery including 1975, close to KBE, DRG close to KBE, Black Lake	131.92	118.58
P-1133	Place holder only, no ponding on any imagery and not on DRG. Rechecked and kept initial conclusion.	8.72	0.00
P-1159	Consistent indications of ponding on all years of imagery. Slightly larger pond on DRG.	20.88	16.69
P-1161	Consistent ponding or indications on all years of imagery, matches KBE, DRG is smaller Consistent on all years of imagery, matches KBE,	9.50	9.48
P-1162	Consistent ponding on all years of imagery and DRG, 2005 close match to KBE, Chuska Lake	101.16	100.95
P-1174	Consistent Indications of ponding on all years - appears to be collector. No drainage at spillway	33.37	14.66
P-1217	Ponding on 96, indistinct indications on 05, 09. Large channel in pond on all years of imagery. Smaller on DRG.	11.90	0.86
P-1232	Consistent indications of ponding, similar on DRG.	6.75	4.70
P-1249	Ponding on 09 larger than KBE, check imagery, on DRG	7.83	9.62
P-1251	Consistent ponding on all years of imagery and DRG.	7.33	6.03
P-1281	Consistent ponding in 96 & 05 imagery and indications on 09. Erosion at breach in 09. Close to KBE.	24.94	19.79
P-1322	Consistent but indistinct indications on all years of imagery, smaller on DRG	6.74	3.05
P-1325	Consistent ponding on all years of imagery, no pond on DRG, berm only	8.93	1.06
P-1333	Consistent ponding or indications on all years of imagery, largest in 09, larger pond on DRG.	57.57	5.88

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KBE Pond ID	Comments	KBE acreage	OSE acreage
P-1367	Place holder only, no indications on any year of imagery. Erosion in every year, no indication of any sedimentation. Breached on all imagery. Berm only on DRG. Rechecked and kept initial conclusion.	7.07	0.00
P-1372	Consistent indications on all years of imagery. Berm only on DRG	7.79	7.77
P-1396	Consistent indications on all years of imagery and DRG	45.99	30.22
P-1405	Indistinct indications of sedimentation, but also erosion on every year of imagery. Channel looks the same inside and outside KBE mapped pond. Drew pond based on DRG.	6.04	0.53
P-1408	Pond on 96, no indications on 05-09 and breached. No pond shown on DRG	6.19	0.72
P-1415	Place holder only, no ponding or indications in any year. Pond is larger on DRG than KBE and does not match imagery. Should discuss. May be collector.	13.77	0.00
P-1425	Place holder only, no ponding on any imagery, may be collector. Berm only on DRG. Rechecked and kept initial conclusion.	8.88	0.00
P-1441	Consistent ponding on all years of imagery, largest on 05, Berm only on DRG	47.31	22.05
P-1443	Consistent indications on all years of imagery, similar but larger on DRG	10.75	4.34
P-1456	Consistent indications but no ponding in any year of imagery - Smaller on DRG and used as guide to interpretation, Tanner Lake	53.80	24.67
P-1459	Consistent indications on all years of imagery - Smaller on DRG	10.25	2.77
P-1475	Consistent indications, small ponds on all imagery. Smaller on DRG	11.26	2.20
P-1486	Consistent indications on all years of imagery, not on DRG, may be collector	12.07	11.58
P-1496	Place holder only. No indications or ponding on any imagery. Part of a group of rectangular ponds. Not on DRG. Listed as stock water in Appendix M.	16.31	0.00
P-1497	Consistent ponding on all years of imagery, not on DRG	9.42	6.18
P-1506	Ponding on 96-05. Smaller on DRG	6.16	0.95
P-1615	Consistent indications of ponding, best in 1996, smaller pond on DRG	7.30	3.82
P-1645	Consistent indications of ponding on all years and DRG.	14.18	0.33
P-1741	Consistent ponding and indications on all years of imagery. No pond on DRG.	20.80	19.70
P-1742	Indistinct indications on imagery when compared to DRG. Erosion in every year, no indication of any sedimentation. Drew pond based on DRG.	11.58	1.23

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KBE Pond ID	Comments	KBE acreage	OSE acreage
P-1744	Ponding on 2005, indications in 1996-09. Pond in DRG.	7.44	5.36
P-1760	No indications on any year of imagery. Erosion in every year, no indication of any sedimentation. Drew pond based on DRG.	22.49	1.38
P-1764	Indications on 96 imagery, breached on other years, smaller on DRG	34.72	5.17
P-1766	Consistent indications on all years of imagery. Not on DRG	7.72	1.25
P-1772	Indications on 05, 09, smaller 96, smaller on DRG. May be collector	8.89	3.22
P-1776	Consistent indications, no ponding on any year of imagery, largest on 05, not on DRG.	7.01	4.70
P-1787	Consistent ponding on all years of imagery, largest on 96, smaller on DRG.	6.41	2.80
P-1815	Ponding on 05, smaller on 96, none on 09, berm only on DRG	8.23	2.26
P-1820	Consistent ponding on all years of imagery. Not on DRG. Appears to be wet area related to well.	7.31	3.25
P-5010	Ponding on 05 and indications on 96-09, Smaller on DRG (Remote P-0156 9.19)	10.36	7.72
P-5021	Consistent ponding on all years of imagery, no pond on DRG	12.52	0.47
P-5033	Consistent ponding in 05, 09. Berm only on DRG (Remote P-0481 - 118.02)	18.42	3.44
P-5088	Consistent ponding on all years of imagery and DRG, matches KBE (Remote P-1238 - 40.57)	40.52	34.00
P-5092	Consistent ponding on all years of imagery and DRG, matches KBE (Remote P-1248 - 9.59)	9.22	9.20
P-5110	Consistent ponding in all years of imagery, not on DRG.	6.21	5.17
P-5140	Ponding on 1996, indistinct indications in 05, indistinct in 09, no pond on DRG or 1965	6.30	3.99
P-5158	Ponding on 2005, smaller in 09, 96, much smaller on DRG (Remote P-0583 - 8.55)	9.97	6.51
P-5167	Consistent ponding on all years of imagery, largest indications in 96. Smaller pond on DRG (Remote P-0046 - 13.16)	12.88	3.66
P-5173	Consistent ponding on all years of imagery. Also smaller on DRG (Remote P-0051)	7.31	1.19
P-5175	Consistent ponding on all years of imagery and DRG. (Remote P-1089 - 6.15)	6.32	5.61
P-5192	Ponding 96, 05, indistinct indications 05-09, smaller on DRG (Remote P0340 - 9.32)	11.22	0.83
P-5193	Ponding in all years of imagery, most on 96. Smaller on DRG (Remote P-0629 - 5.61)	6.04	4.05

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3/21/2012

KBE Pond ID	Comments	KBE acreage	OSE acreage
P-5233	Ponding in 05, smaller ponding or indications on 96, 09 & DRG (Remote P-0330 - 7.20)	6.59	1.47
P-5264	Placeholder only. No ponding or indications on any year of imagery, breached and eroded on every year of imagery, not on DRG	6.00	0.00
P-5274	Consistent indications on all years of imagery, largest in 2009. DRG is larger than OSE. (Remote P-1059 - 17.83)	15.88	2.07
P-5341	Ponding in 1996, appears full, no ponding in 05, indications in 09, not in DRG	15.69	15.47
P-5352	Consistent ponding in all years of imagery. Smaller on DRG. (Remote P-0363 4.09 ac.)	9.34	1.80
P-5367	Consistent indications on all imagery, berm only on DRG (Remote P-1327 - 6.79)	6.53	0.91
P-5375	Consistent ponding on 96 & 05, Smaller on DRG (Remote P-0627 - 7.82)	6.52	1.83
P-5388	Consistent indications on all years of imagery, Larger on DRG (Remote P-0445 - 119.79)	7.52	14.18
P-5390	Consistent indications on all years of imagery. Smaller on DRG. (Remote P-0626 - 6.31)	6.97	0.63
P-5431	Indications on 96 that match to DRG, but breached on all imagery. (Remote P0097-7.59)	6.86	1.54

Table 2. Review of ponds less than 6.00 ac. in surface area

3/21/2012

KBE Pond ID	Comments	KBE acreage	OSE acreage
P-0004	Placeholder only, no ponding or indications in any year, breached and deeply eroded. Not on DRG.	4.35	0.00
P-0015	Ponding on 05, indications on 96 & 09. Mapped as 2 ponds on DRG.	3.07	0.42
P-0019	Ponding or indications on all years of imagery. Larger on DRG	4.13	0.57
P-0055	Ponding on 96 & 05, indications on 09 Not on DRG	1.58	0.99
P-0065	Only visible on 05 imagery, not on DRG	0.21	0.08
P-0066	Consistent ponding or indications on all years of imagery. Not on DRG	0.53	0.08
P-0068	Consistent ponding or indications in all years of imagery. Not on DRG.	0.80	0.49
P-0081	Consistent indications, but smaller ponding on all years of imagery. Not on DRG	1.55	1.04
P-0102	Consistent ponding or indications in all years of imagery and on DRG	1.13	0.77
P-0151	Consistent ponding or indications in all years of imagery. Not on DRG.	0.20	0.20
P-0152	Consistent ponding or indications in all years of imagery, largest on 05. Not on DRG.	2.44	1.86
P-0161	Consistent ponding or indications in all years of imagery and on DRG	1.37	0.92
P-0168	Consistent ponding or indications in all years of imagery and on DRG	1.07	0.58
P-0169	Consistent indications on all years of imagery. Smaller on DRG	0.71	0.48
P-0170	Ponded in all years of imagery, largest on 96. Larger on DRG	0.71	0.38
P-0171	Faint and Indistinct indications on all years of imagery, pond on DRG	1.23	0.24
P-0172	Faint and Indistinct indications on all years of imagery. Larger on DRG	0.57	0.18
P-0177	Consistent indications on all years of imagery. Not on DRG	0.58	0.27
P-0194	Consistent ponding or indications in all years of imagery. Between KBE and OSE on DRG	0.90	0.30
P-0204	Consistent indications on all years of imagery. Not on DRG	0.20	0.08
P-0239	Smaller on DRG, but in slightly different location.	1.49	0.81
P-0240	Between KBE and OSE on DRG	2.93	0.28
P-0244	Similar to KBE on DRG	0.59	0.34
P-0254	Between KBE and OSE on DRG	0.16	0.07
P-0290	Similar on DRG	1.24	0.68
P-0300	Ponding on all years of imagery and on DRG, largest on 05.	1.15	0.61
P-0305	Similar on DRG	2.67	0.77
P-0315	Consistent ponding/indications on all years of imagery. Berm only on DRG.	4.94	0.69
P-0316	Larger than OSE and KBE on DRG	0.09	0.03
P-0324	Consistent ponding or indications in all years of imagery. Larger on DRG	1.06	0.71

Table 2. Review of ponds less than 6.00 ac. in surface area

3/21/2012

KBE Pond ID	Comments	KBE acreage	OSE acreage
P-0325	Consistent ponding on 96-05-09 imagery. Larger on 69 and DRG.	4.74	5.59
P-0329	Similar to OSE on DRG	0.73	0.18
P-0343	Consistent ponding on all years of imagery and DRG.	3.23	0.85
P-0345	Similar to OSE on DRG	2.52	0.56
P-0346	Breached and eroded in 96-05. Small ponding on 09 and DRG.	2.54	0.19
P-0347	Ponding in 96, largest in 05. Smaller pond on DRG.	4.54	3.29
P-0348	Ponding or indications on all years of imagery, 05 is largest and matches DRG	3.98	1.15
P-0350	Ponding or indications on all years of imagery, largest on 05 consistent with DRG.	2.59	1.45
P-0450	No ponding on any year of imagery. Indistinct indications and may be two ponds. Smaller on DRG	5.37	1.75
P-0451	Similar to OSE on DRG	0.76	0.16
P-0452	Ponding on all years of imagery, largest on 96. Pond on DRG larger than OSE.	3.39	1.68
P-0454	Consistent ponding or indications in all years of imagery and on DRG	1.04	0.56
P-0456		0.80	0.37
P-0467		0.61	0.17
P-0469		1.06	0.34
P-0476		1.37	0.21
P-0487	Consistent ponding in all years of imagery and DRG.	2.48	0.28
P-0504		2.35	0.86
P-0507	Consistent ponding or indications in all years of imagery and on DRG	2.37	0.59
P-0508	Two distinct areas of ponding consistent on all imagery. DRG shows easterly pond larger than OSE.	2.95	0.29
P-0509		3.04	1.00
P-0512	Consistent ponding or indications in all years of imagery. Not on DRG.	0.90	0.32
P-0519	Consistent ponding on all years of imagery. Not on DRG.	5.58	0.91
P-0521	Consistent ponding on all years of imagery. Smaller pond on DRG	0.92	0.93
P-0587		3.45	0.58
P-0589		1.15	0.14
P-0593		0.80	0.29
P-0599		0.37	0.22
P-0600	Consistent ponding in all years of imagery. Not on DRG. May be collector.	1.91	0.57
P-0607		3.89	0.57
P-0608		1.22	0.15
P-0617	Consistent ponding on all years of imagery and DRG.	4.80	0.28
P-0665	Consistent ponding on all years of imagery. Similar pond on DRG	0.85	0.48
P-0669	Consistent indications of ponding on all years of imagery. Larger on DRG	1.89	0.63
P-0672		0.53	0.28

Table 2. Review of ponds less than 6.00 ac. in surface area

3/21/2012

KBE Pond ID	Comments	KBE acreage	OSE acreage
P-0674	No Ponding on any imagery. Indistinct indications. Larger pond shown on DRG.	4.80	1.63
P-0679		0.15	0.06
P-0687	Indistinct and faint indications, best on 09 and similar on DRG.	4.42	0.47
P-0709		0.89	0.37
P-0710		0.69	0.25
P-0717	Similar to OSE on DRG	1.34	0.34
P-0718		0.72	0.37
P-0719	Consistent ponding or indications in all years of imagery and on DRG.	0.70	0.22
P-0720	Placeholder only, no ponding or indications on any imagery, pond on DRG, deeply eroded.	1.14	0.00
P-0721	Ponding on all years of imagery largest on 96. Close match to pond on DRG	1.04	0.41
P-0724		0.81	0.08
P-0725		0.66	0.11
P-0727	No ponding or indications on any year of imagery. Eroded and Breached. Pond on DRG.	1.61	0.63
P-0729		1.77	0.59
P-0733		0.95	0.22
P-0735		0.19	0.07
P-0736	Consistent ponding or indications in all years of imagery and on DRG	1.50	0.30
P-0738		2.39	0.37
P-0739		0.18	0.12
P-0746	Placeholder only, no ponding or indications on any imagery, not on DRG, deeply eroded.	3.16	0.00
P-0747	Placeholder only, no ponding or indications on any imagery, pond on DRG, deeply eroded.	2.59	0.00
P-0756	Faint and Indistinct indications on all years of imagery, pond on DRG	1.50	0.25
P-0757	No ponding or indications 96-05-09 imagery, faint on 11. Pond on DRG.	0.65	0.11
P-0812		2.12	0.62
P-0813	No Ponding, but consistent indications on all years of imagery and matches DRG	4.28	1.31
P-0827	Consistent indications of ponding visible on all years of imagery that match to DRG	2.13	0.90
P-0994	No ponding in any year of imagery, indistinct indications, drew pond based on DRG	4.21	0.32
P-1032	Consistent ponding/indications on all years of imagery. Pond on DRG.	4.93	2.56
P-1063	No Ponding on any imagery. Indistinct indications. Pond shown on DRG.	2.38	0.60
P-1096	No Ponding, but consistent indications on all years of imagery and matches DRG	4.16	1.25
P-1156	Consistent ponding on 96-05 and indications on 09, matches DRG	2.35	1.71
P-1186		2.77	1.58
P-1208	Faint and Indistinct indications on 05 & 09 imagery, pond on DRG	0.93	0.23

Table 2. Review of ponds less than 6.00 ac. in surface area

3/21/2012

KBE Pond ID	Comments	KBE acreage	OSE acreage
P-1234	Consistent indications on all years of imagery. Not on DRG.	1.10	0.58
P-1328	Consistent indications and smaller ponding on all years of imagery. Berm only on DRG.	5.25	0.91
P-1383	Ponding on 96-05, indications on 09. Larger than OSE, smaller than KBE on DRG.	1.04	0.24
P-1385	Indistinct on 96, consistent ponding on 05-09-11. Larger on DRG.	1.10	0.17
P-1387	Consistent ponding in all years of imagery and DRG.	1.78	1.23
P-1400	Consistent ponding in all years of imagery and DRG.	0.93	0.29
P-1402	Consistent ponding on 96-09. Smaller on 05 & DRG	1.17	0.87
P-1403	Ponding on 96, indications on 05 & 09. Larger than OSE, smaller than KBE on DRG	3.87	2.01
P-1426	Consistent indications on all years of imagery. Not on DRG.	1.21	0.69
P-1442	Consistent ponding or indications in all years of imagery. Larger than OSE on DRG	0.97	0.41
P-1444	Consistent ponding on all years of imagery and DRG.	3.46	1.02
P-1457	Consistent ponding or indications on all years of imagery. Not on DRG. Overlaps on project FieldID 34	0.39	0.23
P-1474	Ponding in 96, indications on 05 & 09 that match DRG	0.80	0.46
P-1476	Consistent ponding on all years of imagery and DRG.	4.20	0.90
P-1478	Ponding in all years of imagery, largest on 96. Not on DRG.	1.58	1.28
P-1508	Consistent ponding on all years of imagery, larger on DRG.	2.62	0.45
P-1714	Ponding on 96, largest on 05, none on 09 or DRG	3.88	2.21
P-1716	Consistent ponding or indications on all years of imagery. Not on DRG	0.34	0.24
P-1728	Ponding on 09 & 05, largest on 09, indistinct on 96. Not on DRG	3.29	2.36
P-1729	Multi Pond (1 KBE pond that appears to be two on the imagery) Faint indications, pond on DRG	0.35	0.09
P-1734	Consistent ponding or indications on all years of imagery and DRG	0.42	0.19
P-1735	Consistent ponding or indications on all years of imagery. Not on DRG	3.19	0.27
P-1758	Consistent ponding or indications on all years of imagery and DRG	1.57	0.89
P-1767	Consistent ponding on all years of imagery and DRG.	3.68	0.46
P-1775	No Ponding on any imagery. Indistinct indications. Larger pond shown on DRG.	4.32	2.03

Table 2. Review of ponds less than 6.00 ac. in surface area

3/21/2012

KBE Pond ID	Comments	KBE acreage	OSE acreage
P-1780	Consistent ponding/indications on all years of imagery and DRG. Overlaps non-project fieldID 593	3.48	0.41
P-1813	Consistent ponding/indications on all years of imagery. Berm only on DRG.	4.53	1.39
P-1821	Faint and Indistinct indications on 09 imagery only, pond on DRG	2.64	0.38
P-1822	Placeholder only, no ponding or indications in any year, Not on DRG.	1.93	0.00
P-5011	(Remote P-1216 - 2.81)	2.79	0.77
P-5016	(Remote P-0139 - 0.49)	0.48	0.32
P-5024	Consistent ponding on all years of imagery. Not on DRG.	1.03	0.42
P-5025	(Remote P-0320 0.28)	0.12	0.13
P-5029	(Remote P-0186 - 0.88)	0.58	0.61
P-5035	(Remote P-0478 - 0.58)	0.73	0.28
P-5058	(Remote P-0326 - 1.36)	1.38	0.75
P-5077	Consistent ponding on all years of imagery and DRG.	1.50	0.80
P-5118	Consistent ponding or indications on all years of imagery. Not on DRG	0.96	0.43
P-5121	Indistinct indications on all years of imagery, not on DRG	1.67	0.21
P-5124	Consistent ponding on all years of imagery and DRG. (Remote P-0079 - 1.42)	1.48	1.04
P-5141	Consistent ponding or indications on all years of imagery. Larger on DRG	2.56	1.53
P-5165	Consistent ponding on 2005-96, no pond on DRG (Remote P-0054 - 6.38)	5.91	0.47
P-5176	Consistent ponding on all years of imagery. DRG shows pond a little to east of OSE.	3.06	0.14
P-5195	Ponding 05, consistent indications 96-09. Smaller on DRG (Remote P-0592 - 15.51)	5.94	2.84
P-5205	Consistent ponding or indications on all years of imagery and DRG	1.81	0.60
P-5225	Consistent ponding or indications on all years of imagery. Not on DRG	0.11	0.15
P-5229	No ponding or indications on any year of imagery. Eroded and Breached. Pond on DRG.(Remote P-0728 - 2.36)	0.94	0.78
P-5239	Consistent ponding or indications on all years of imagery. Not on DRG	1.52	0.48
P-5261	Consistent ponding on all years of imagery and DRG. (Remote P-0333 - 2.24)	4.64	0.92
P-5270	Consistent ponding or indications on all years of imagery. Slightly different location on DRG	0.30	0.29
P-5306	Consistent ponding or indications on all years of imagery. Not on DRG	0.91	0.38
P-5309	Consistent ponding or indications on all years of imagery. Not on DRG	0.62	0.20
P-5316	Consistent ponding or indications on all years of imagery. Not on DRG	2.17	1.16

Table 2. Review of ponds less than 6.00 ac. in surface area

3/21/2012

KBE Pond ID	Comments	KBE acreage	OSE acreage
P-5318	Consistent ponding on all years of imagery. Not on DRG (Remote P-0362 - 0.71)	0.58	0.30
P-5376	Ponding on 96, indistinct on 05-09. Smaller on DRG	1.93	1.78
P-5380	Ponding on 96, indistinct on 05-09. Not on DRG.	0.78	0.70
P-5400	Ponding on 96, indications on 05-09. Similar to KBE on DRG.	3.24	1.42
P-5404	Ponding on 96, indistinct on 05, nothing on 09. Pond smaller than KBE on DRG	1.29	0.19
P-5424	Multi Pond, smaller ponding on all years. (P-5424, 5425, 5422, Remote - P-0103, 0104)	5.16	1.20
P-5428	Consistent ponding on all years of imagery. Similar to KBE on DRG. (Remote P-0099 1.17)	1.10	0.52

MAPS

Section 1

Ponds mapped by KBE for which the OSE could not find any indications of ponding.






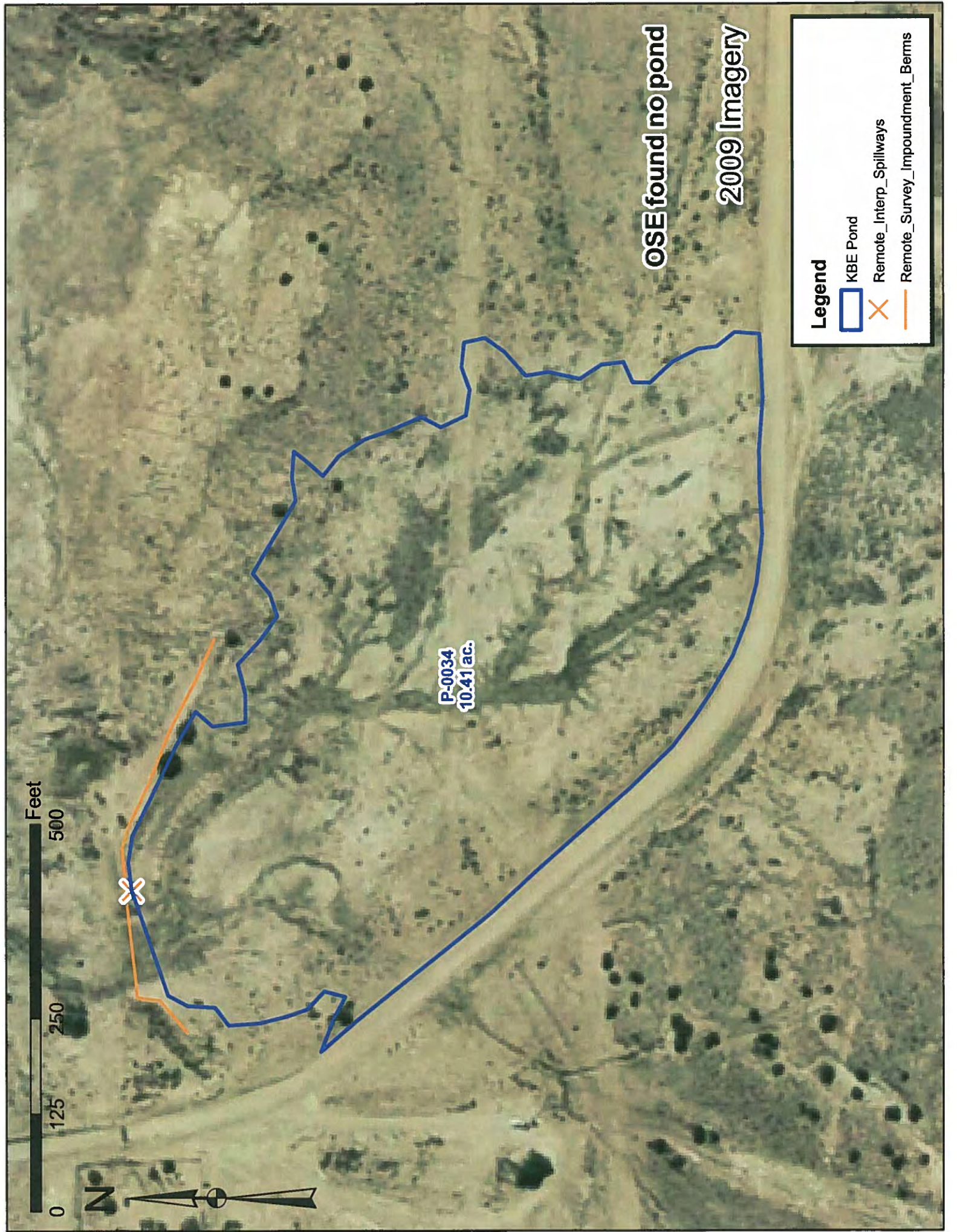
P-0034
10.41 ac.

OSE found no pond

2009 Imagery

Legend

-  KBE Pond
-  Remote_Interp_Spillways
-  Remote_Survey_Impoundment_Berms








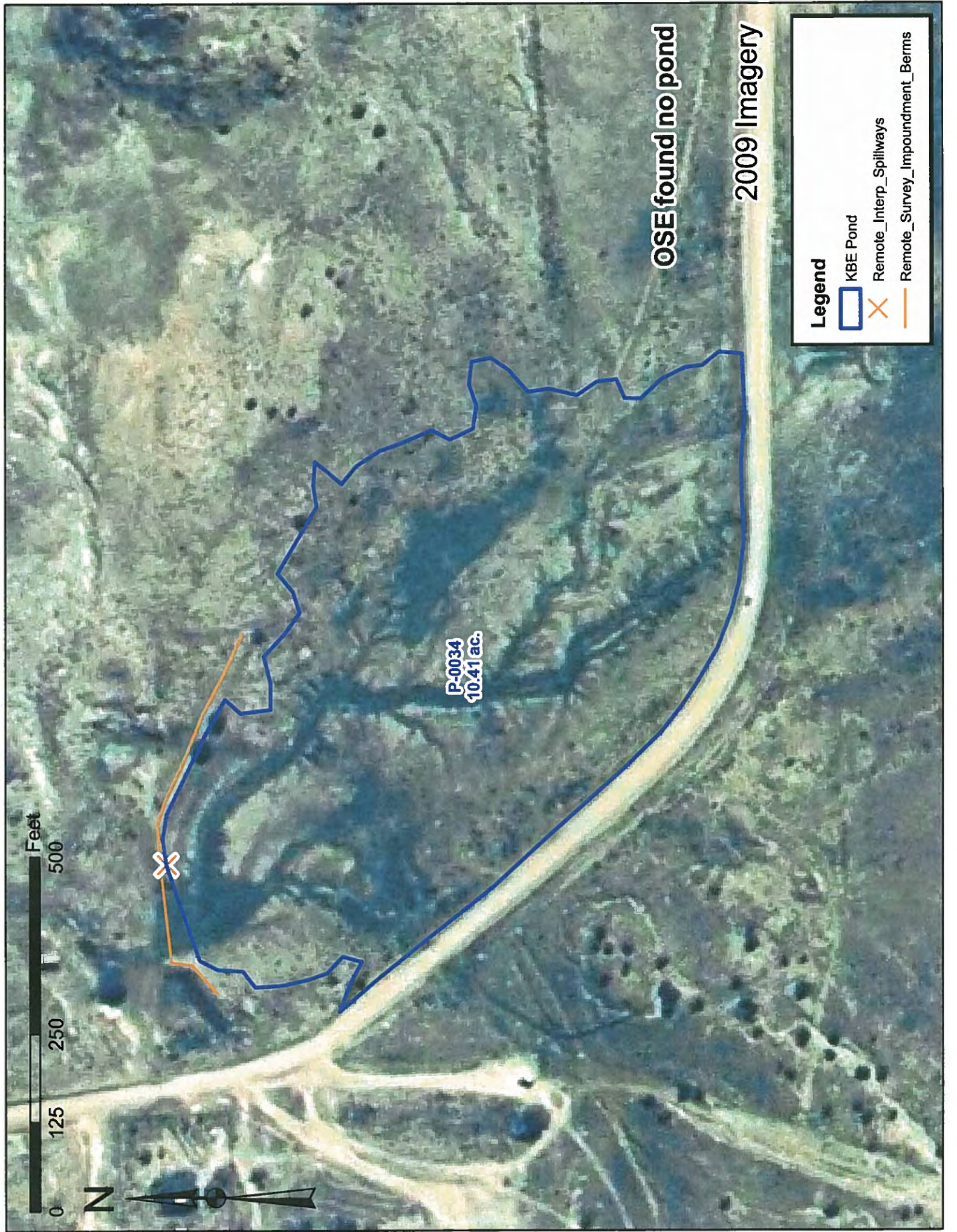
P-0034
10.41 ac.

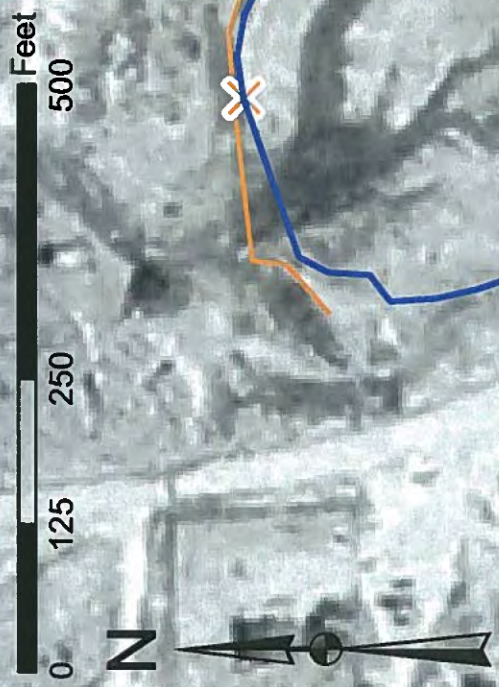
OSE found no pond

2009 Imagery

Legend

-  KBE Pond
-  Remote_Interp_Spillways
-  Remote_Survey_Impoundment_Berms








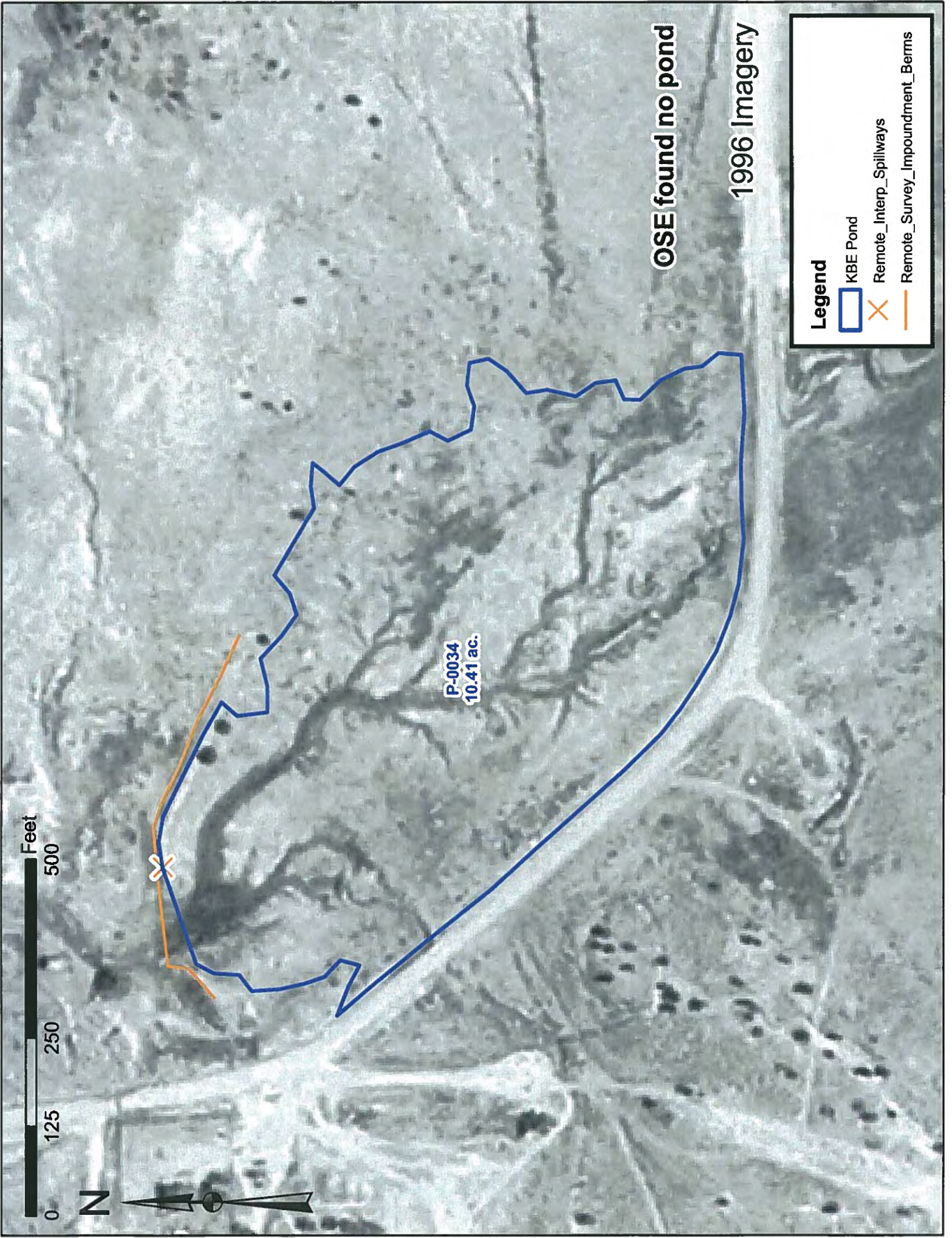
P-0034
10.41 ac.

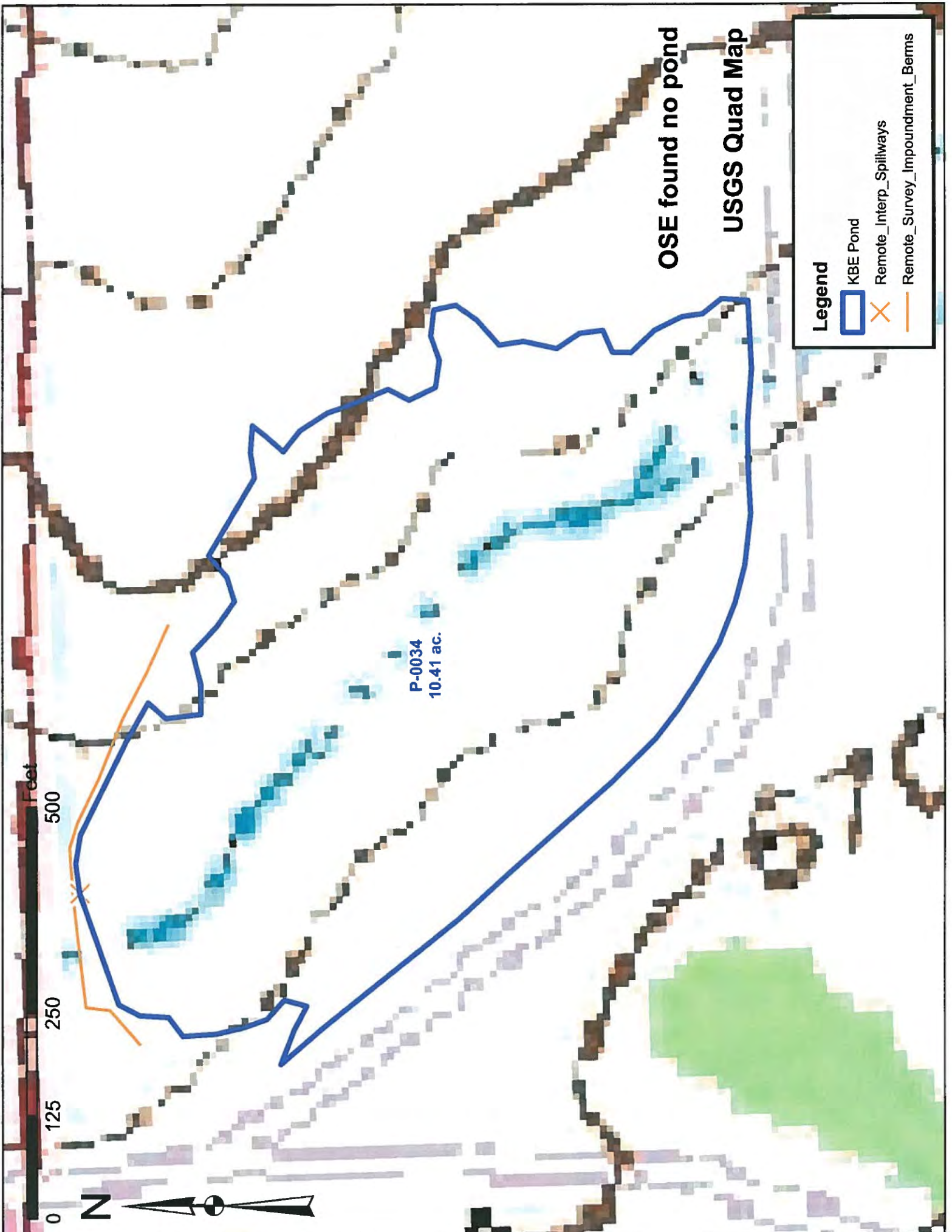
OSE found no pond

1996 Imagery

Legend

-  KBE Pond
-  Remote_Interp_Spillways
-  Remote_Survey_Impoundment_Berms





OSE found no pond

USGS Quad Map

Legend

KBE Pond

Remote_Interp_Spillways

Remote_Survey_Impoundment_Berms

P-0034
10.41 ac.




0 125 250 500 Feet

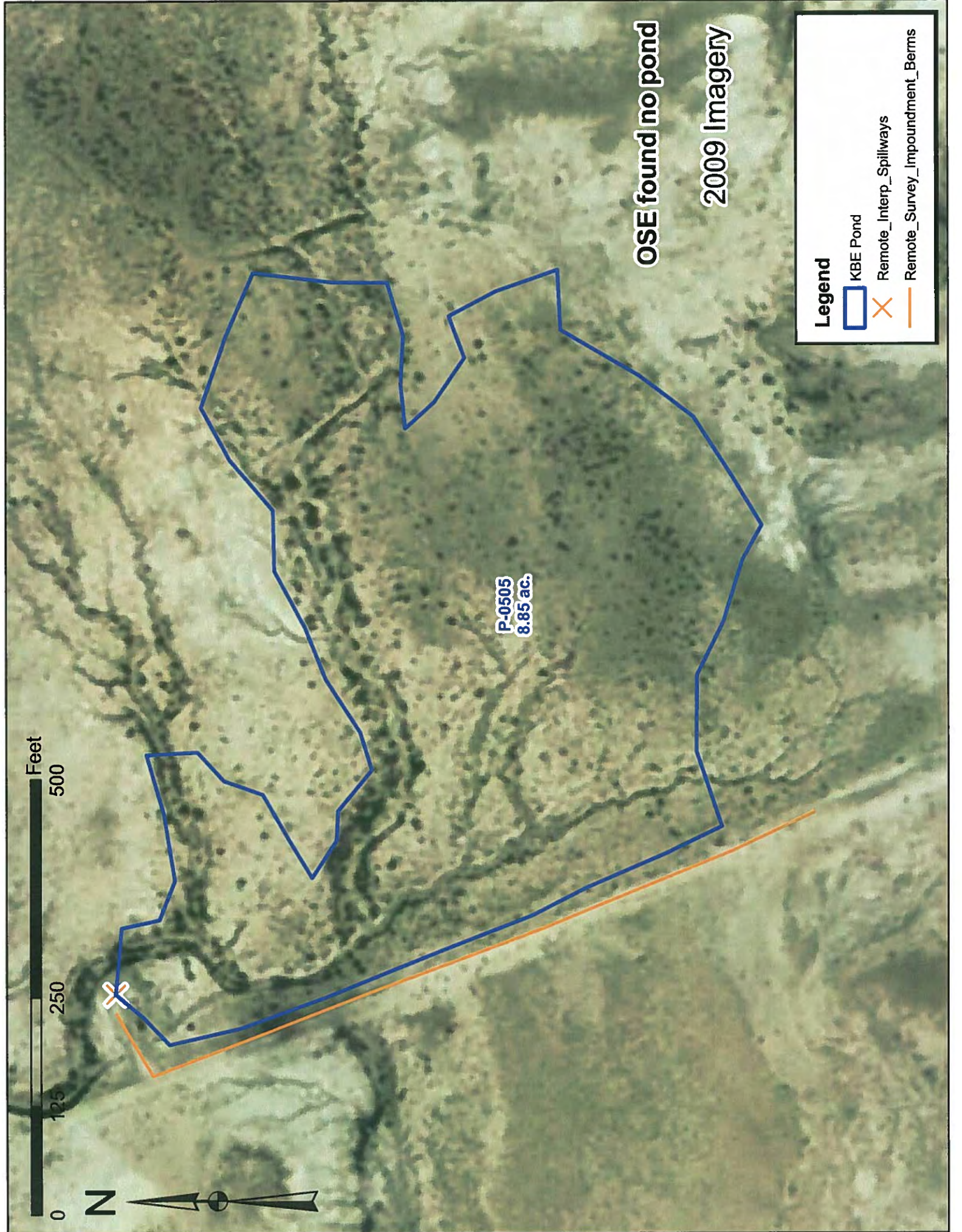


P-0505
8.85 ac.

OSE found no pond
2009 Imagery

Legend

-  KBE Pond
-  Remote_Interp_Spillways
-  Remote_Survey_impoundment_Berms






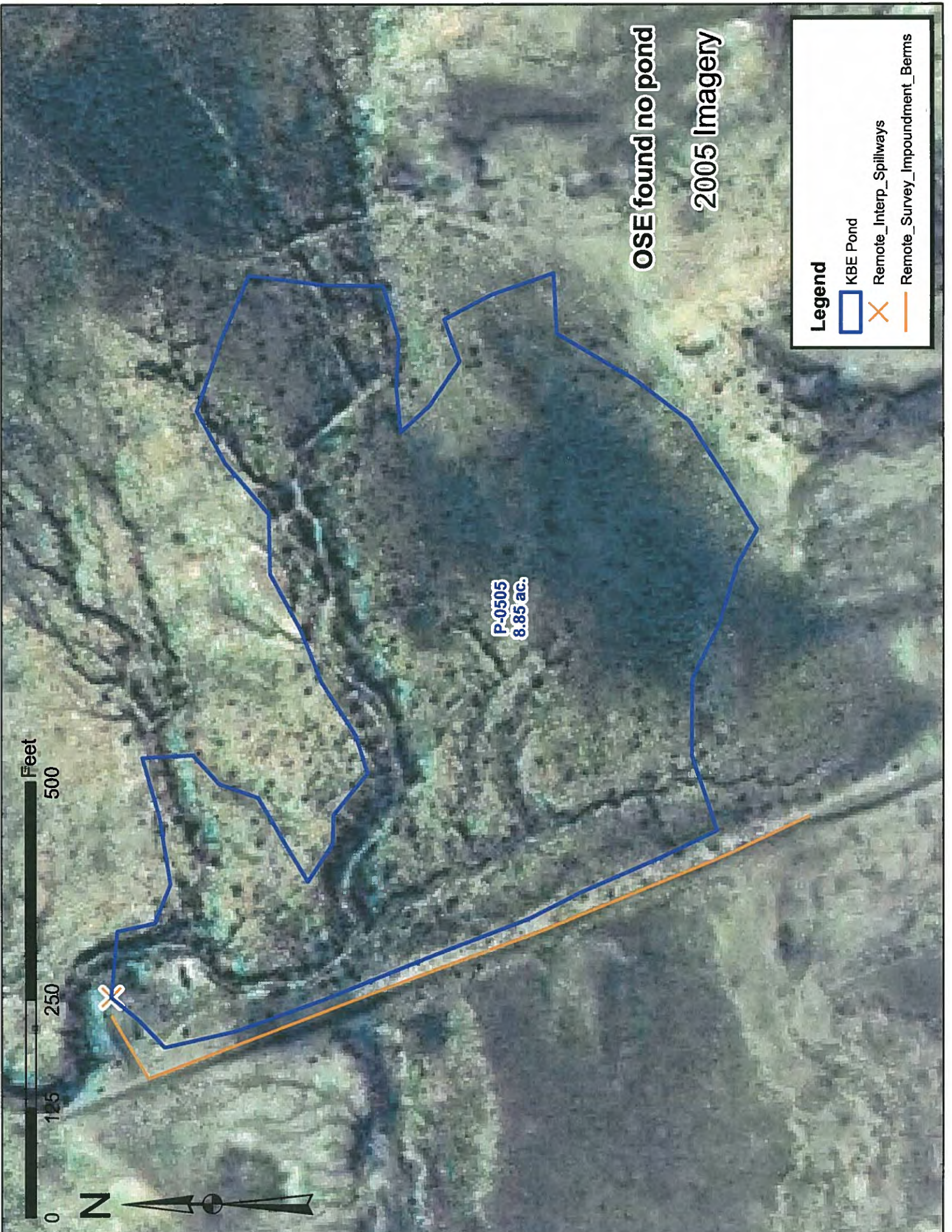


P-0505
8.85 ac.

OSE found no pond
2005 Imagery

Legend

-  KBE Pond
-  Remote_Interp_Spillways
-  Remote_Survey_Impoundment_Berms








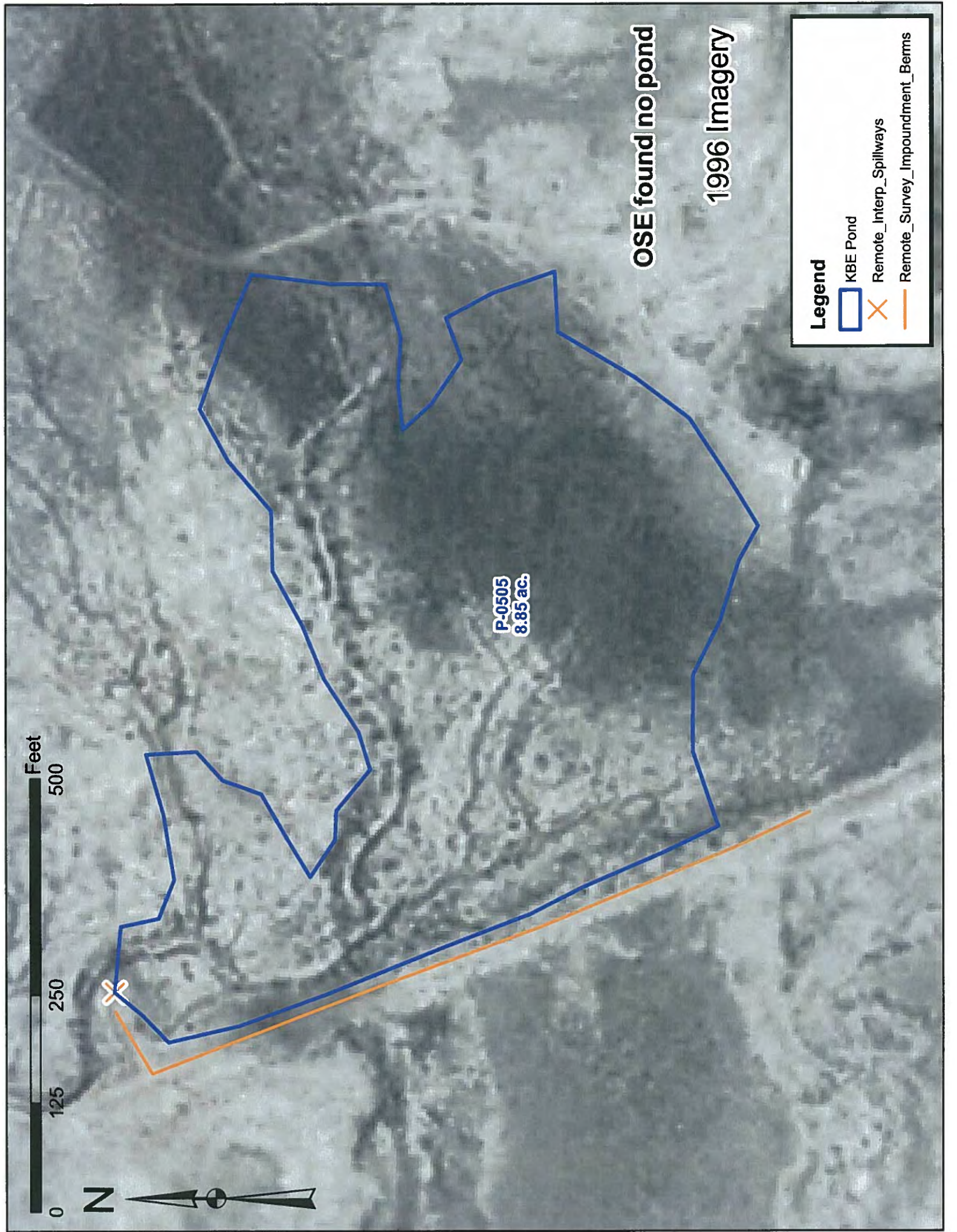
P-0505
8.65 ac.

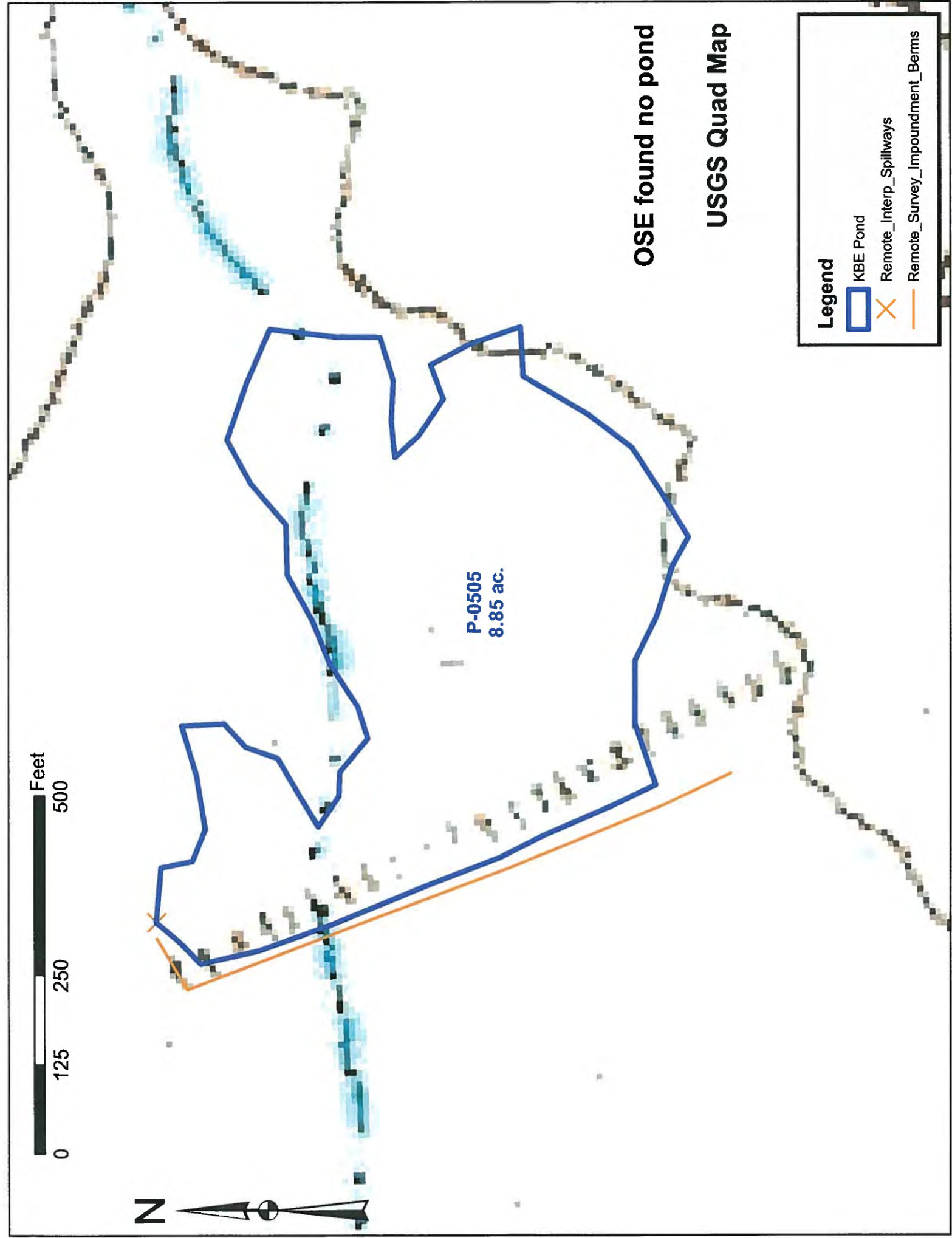
OSE found no pond

1996 Imagery

Legend

-  KBE Pond
-  Remote_Interp_Spillways
-  Remote_Survey_Impoundment_Berms








P-0505
8.85 ac.

OSE found no pond

USGS Quad Map

Legend




-  KBE Pond
-  Remote_Interp_Spillways
-  Remote_Survey_Impoundment_Berms



OSE found no pond

2009 Imagery

Legend

-  KBE Pond
-  Remote_Interp_Spillways
-  Remote_Survey_Impoundement_Berms

0 125 250 500 Feet




P-0808
6.76 ac.


OSE found no pond

2005 Imagery

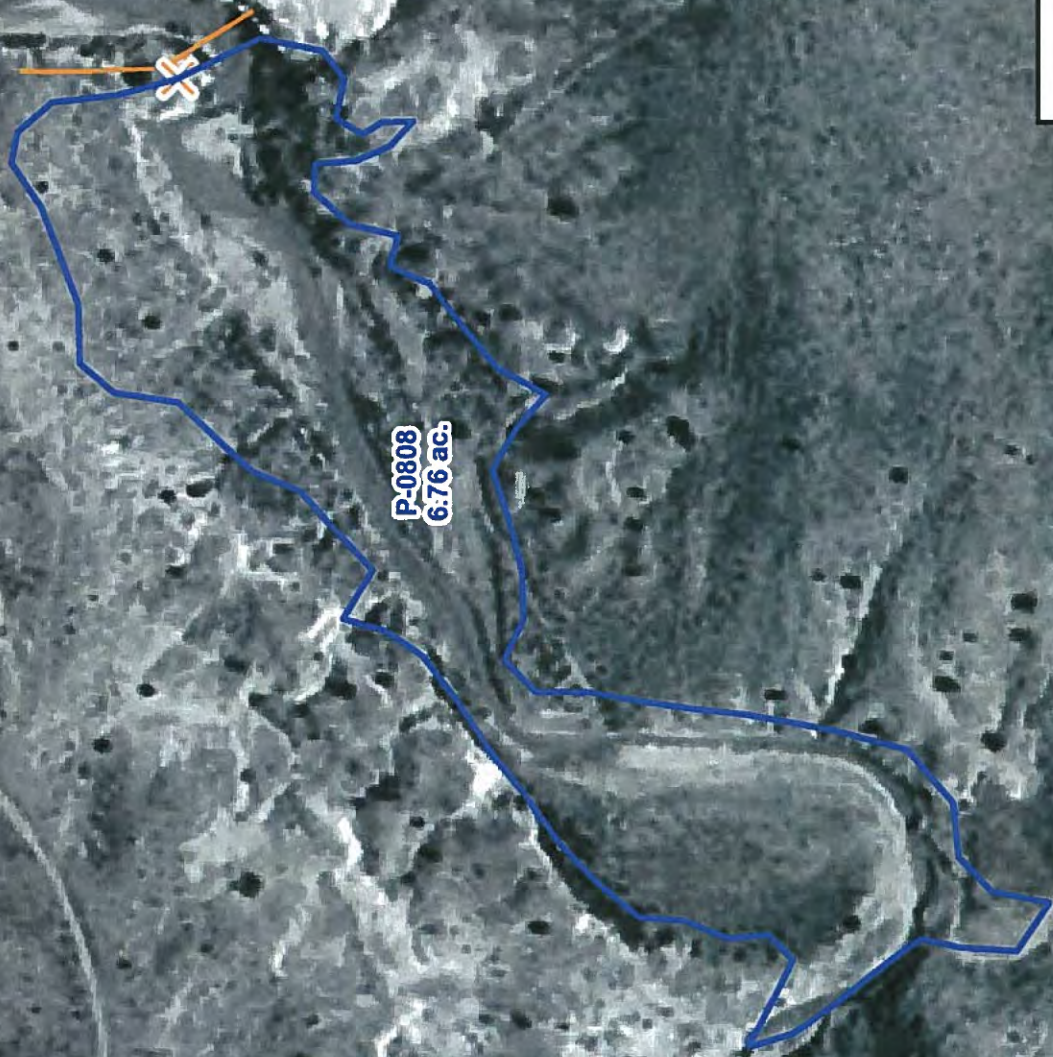
Legend

 KBE Pond

 Remote_Interp_Spillways

 Remote_Survey_Impoundments_Berms








P-0808
6.76 ac.

©SE found no pond

1996 Imagery

Legend

-  KBE Pond
-  Remote_Interp_Spillways
-  Remote_Survey_Impoundment_Berms

0 125 250 500 Feet



Charlie Webb

P-0808
6.76 ac.


OSE found no pond

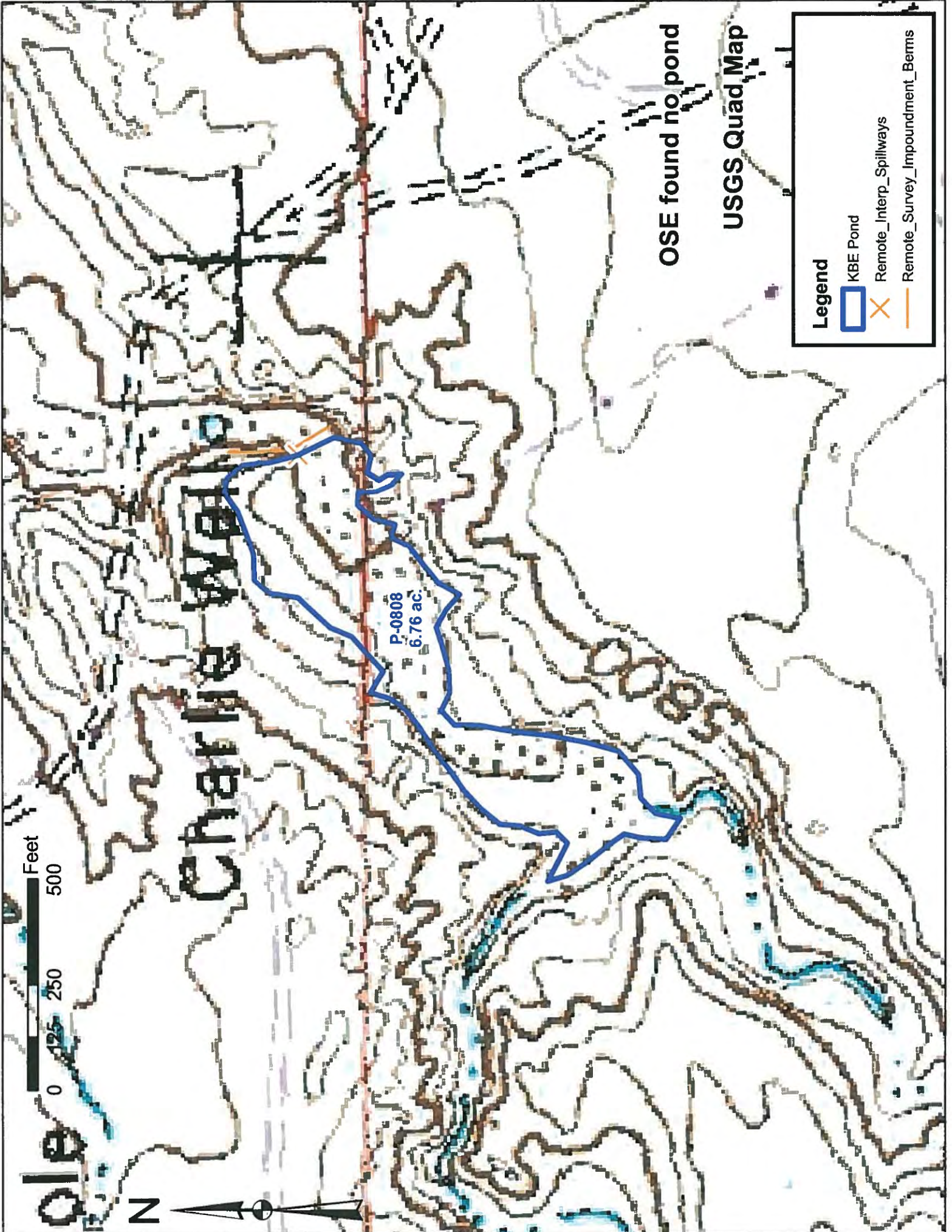
USGS Quad Map

Legend

 KBE Pond

 Remote_Interp_Spillways

 Remote_Survey_Impoundement_Berms



Feet
0 125 250 500




P-0986
87.96 ac.


OSE found no pond

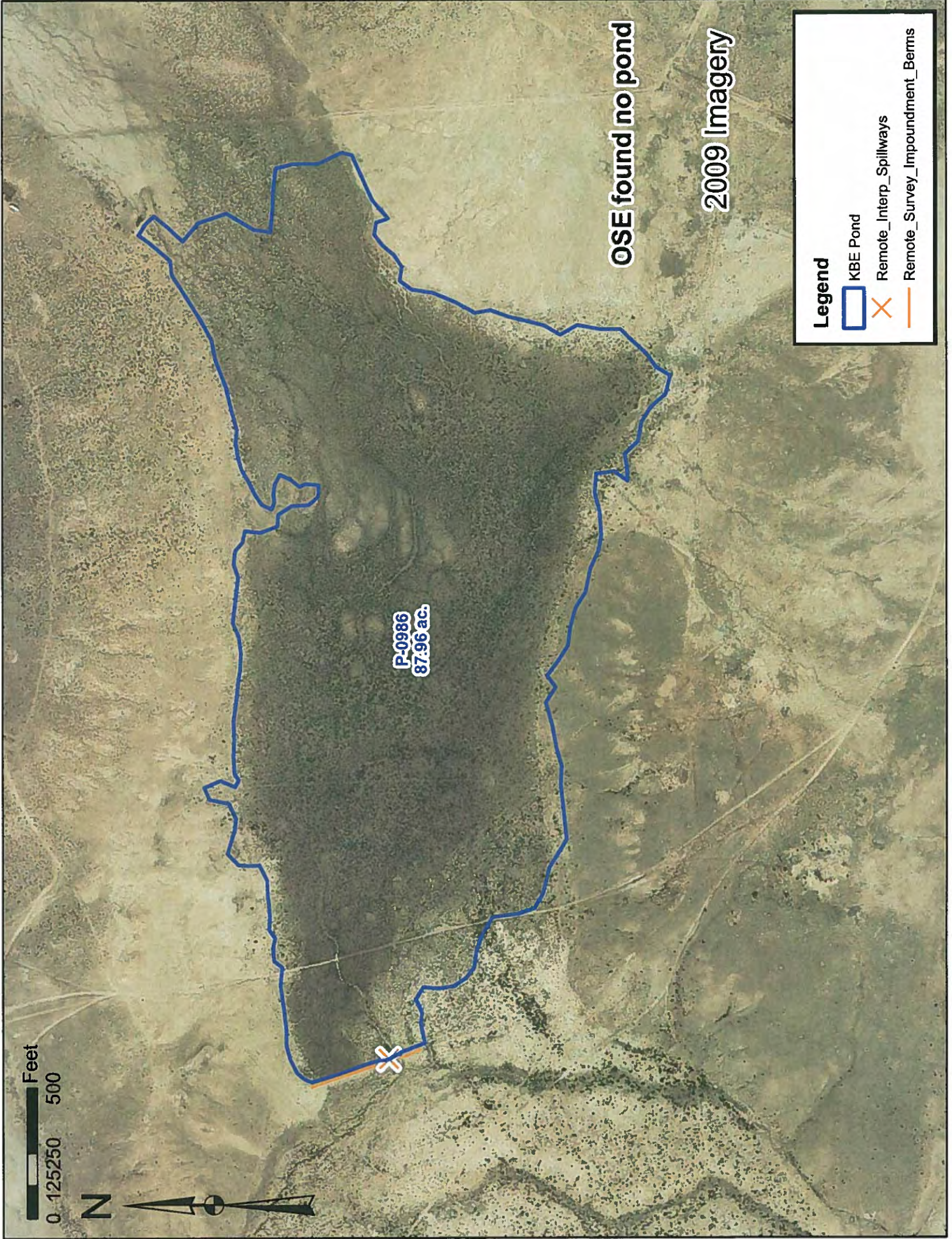
2009 Imagery

Legend

 KBE Pond

 Remote_Interp_Spillways

 Remote_Survey_Impoundment_Berms



Feet
0 125250 500






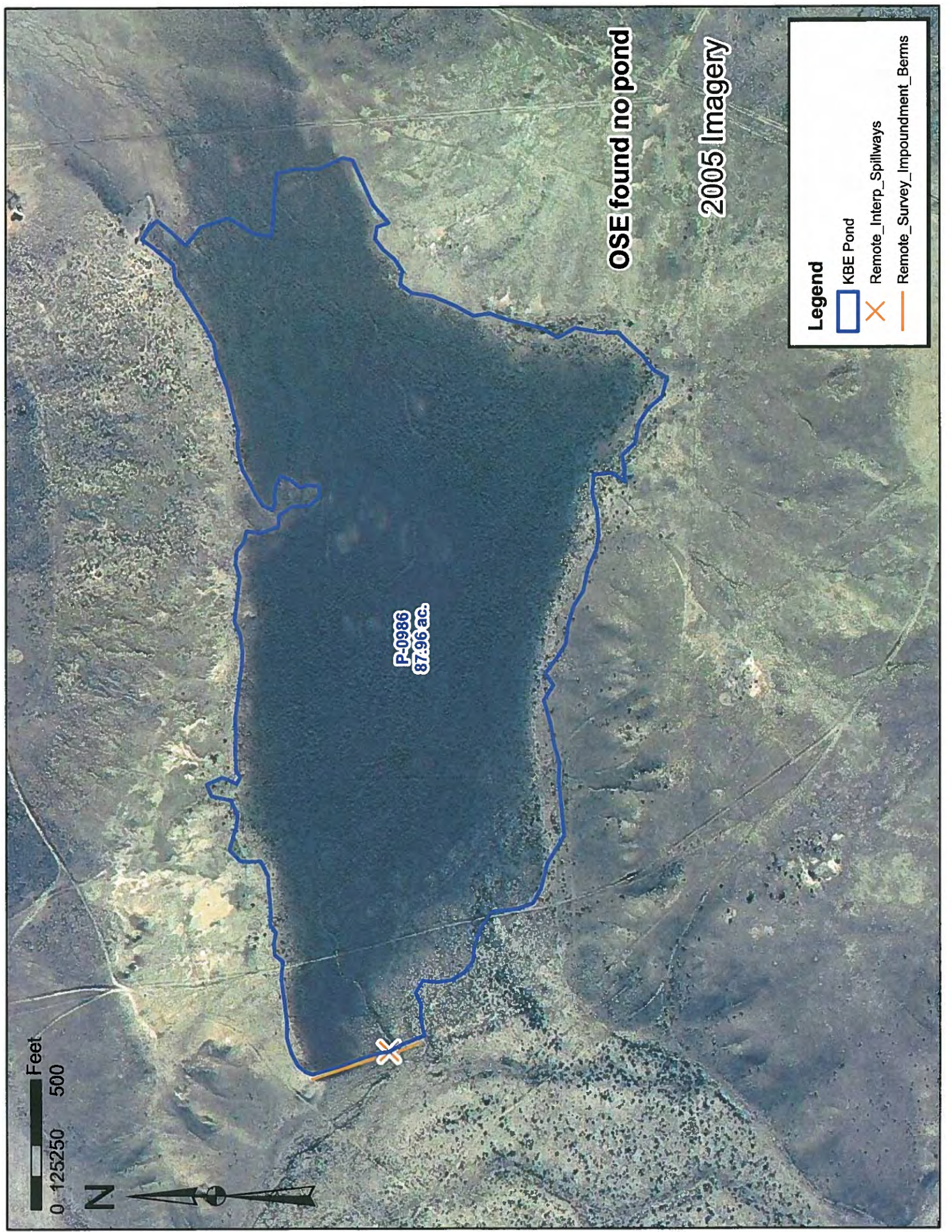
P-0986
87.96 ac.

OSE found no pond

2005 Imagery

Legend

-  KBE Pond
-  Remote_Interp_Spillways
-  Remote_Survey_Impoundment_Berms



0 125250 500 Feet




P-0986
87.96 ac.


OSE found no pond

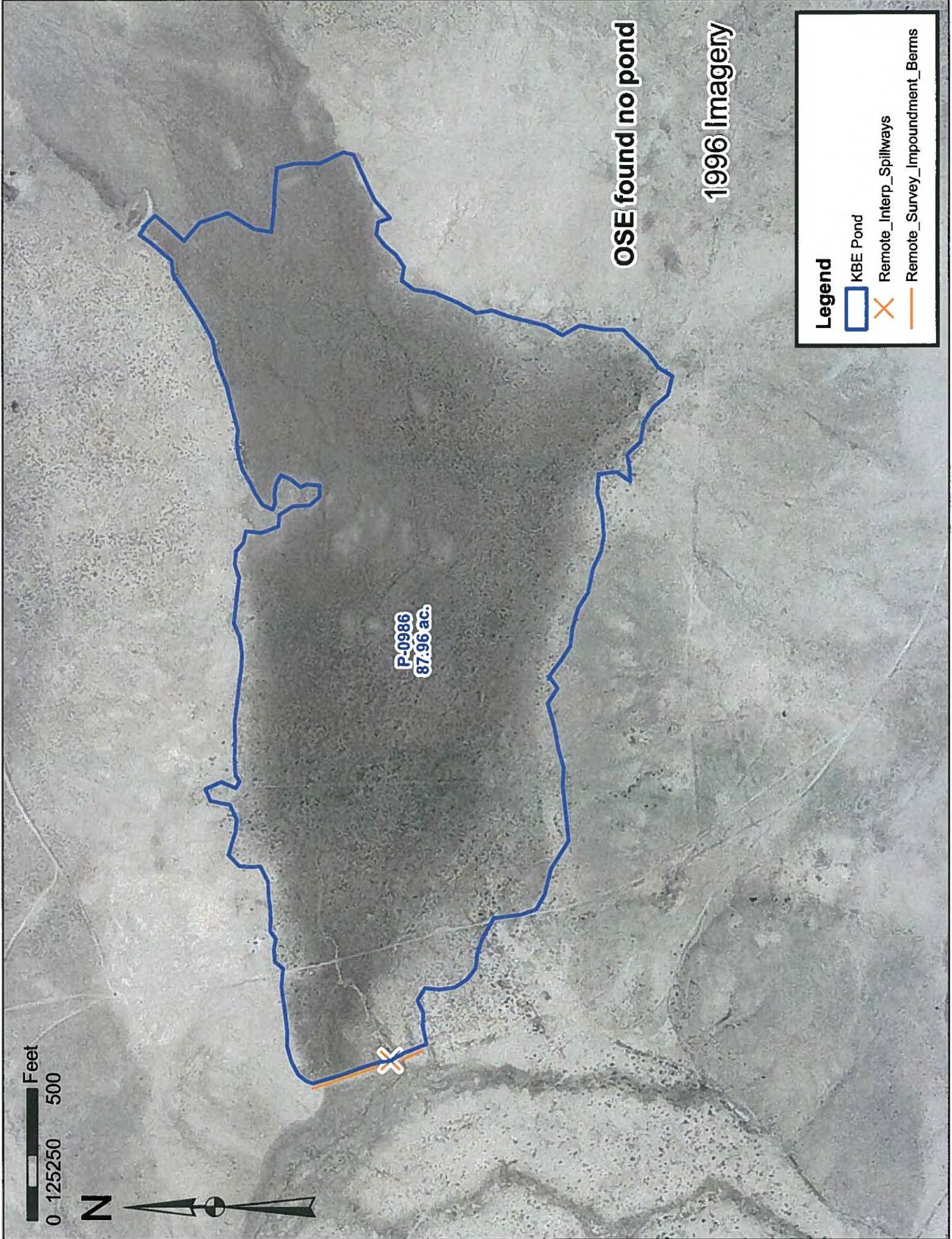
1996 Imagery

Legend

 KBE Pond

 Remote_Interp_Spillways

 Remote_Survey_Impoundement_Berms



0 125250 500 Feet



6457

P-0986
87.96 ac.


OSE found no pond


USGS Quad Map


6479

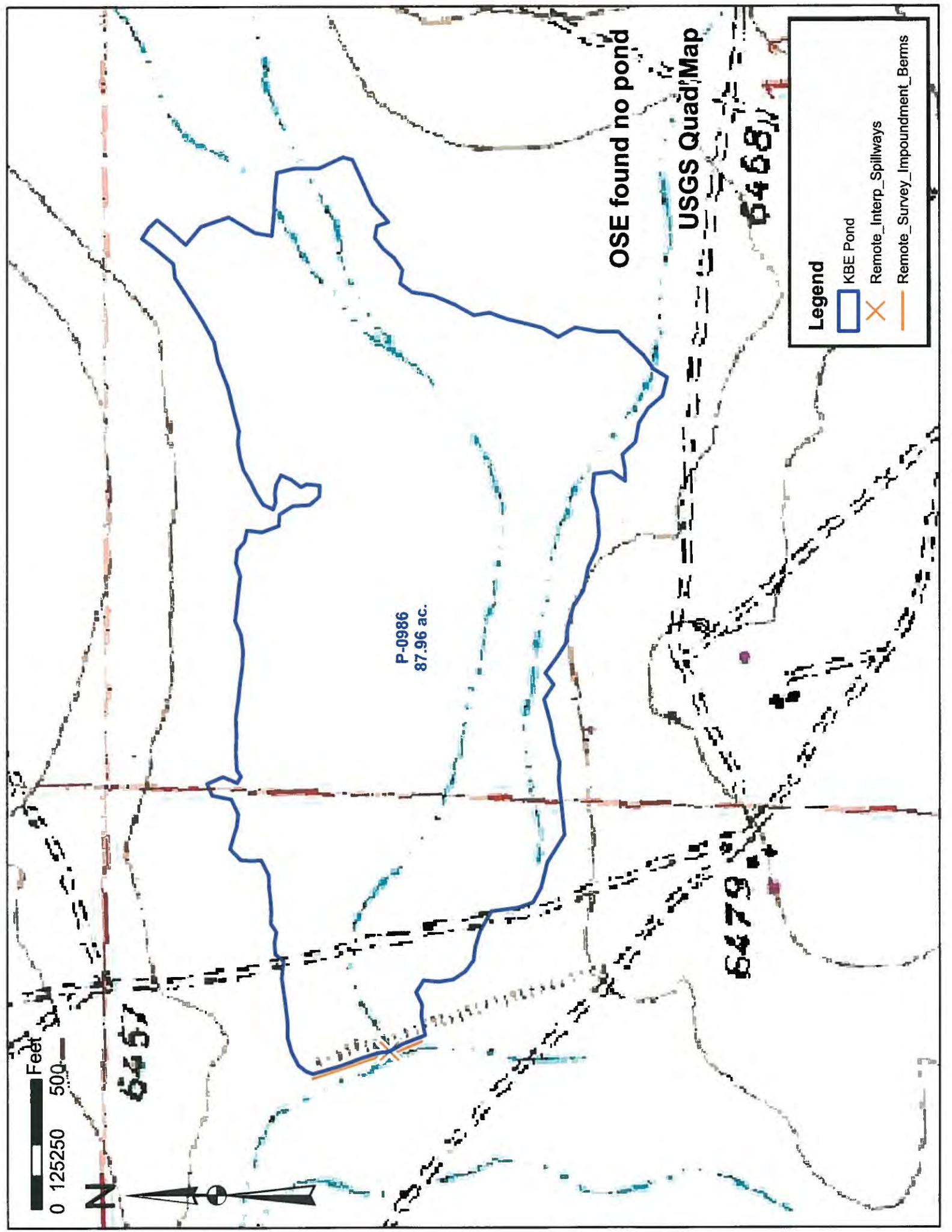
6468

Legend

 KBE Pond

 Remote_Interp_Spillways

 Remote_Survey_Impoundment_Berns



0 125 250 500 Feet





©SE found no pond at P-1133

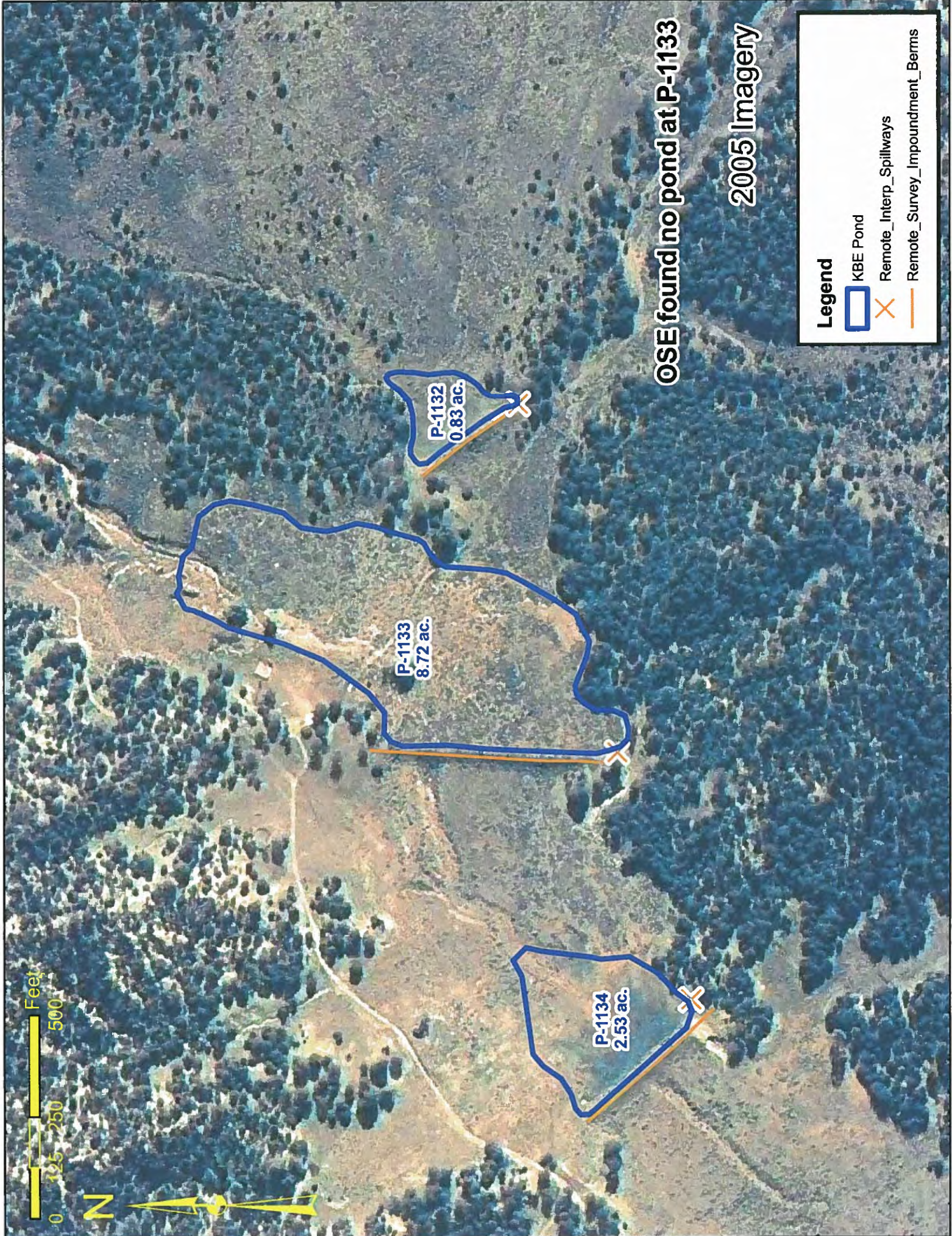
2009 Imagery

Legend

 KBE Pond

 Remote_Interp_Spillways




 Remote_Survey_Impoundement_Berms

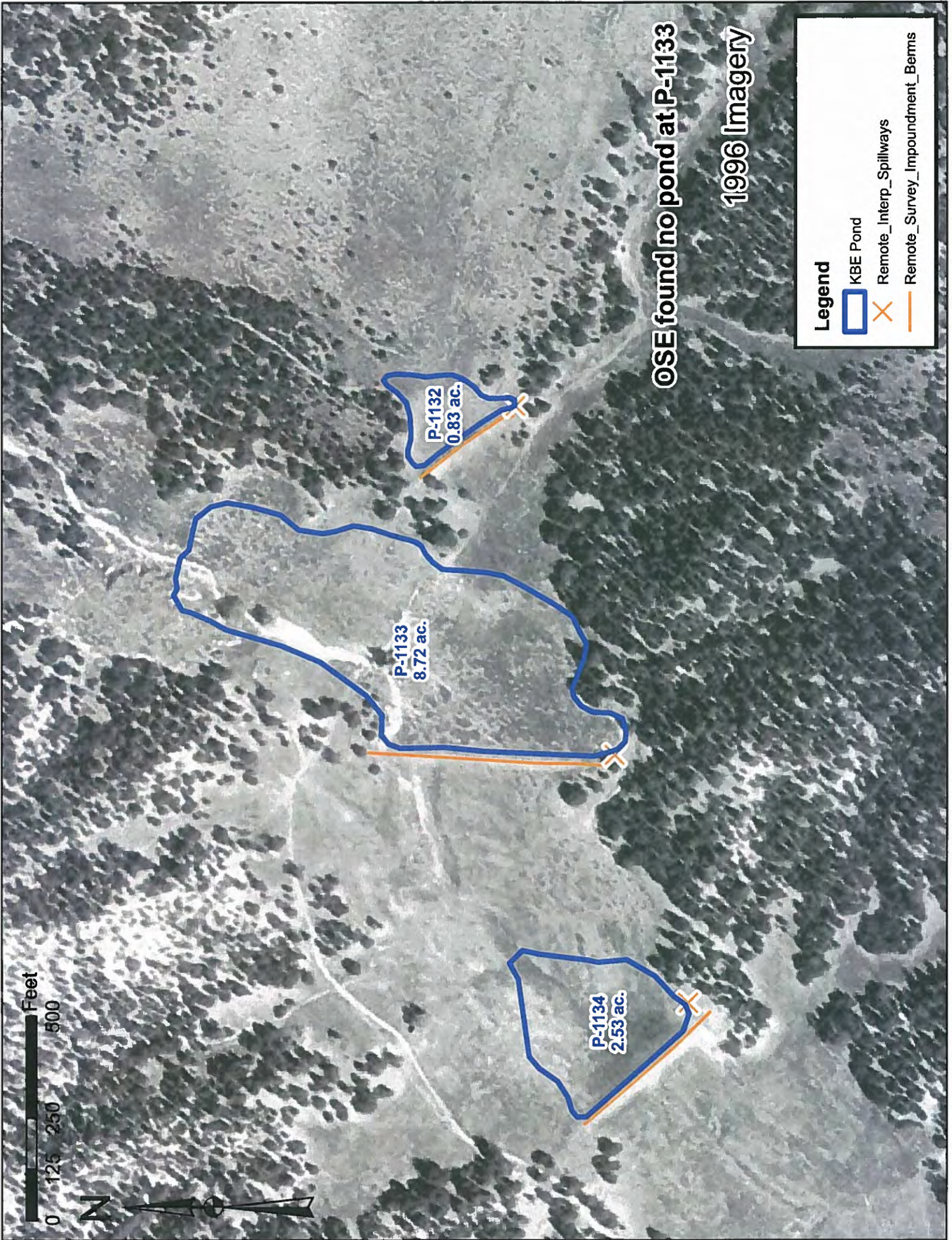


OSE found no pond at P-1133

2005 Imagery

Legend

-  KBE Pond
-  Remote_Interp_Spillways
-  Remote_Survey_Impoundment_Berms



©SE found no pond at P-1133

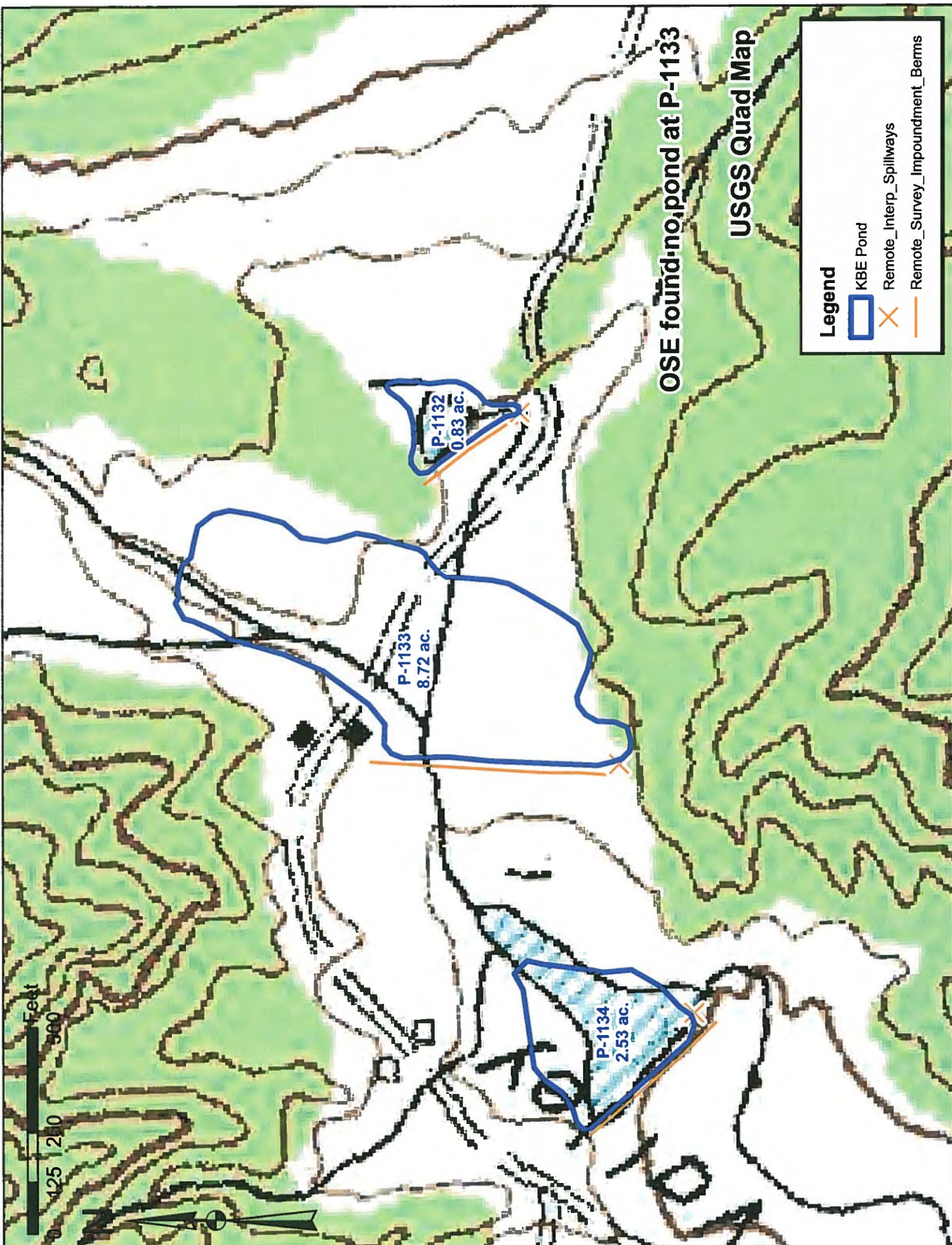
1996 Imagery

Legend

-  KBE Pond
-  Remote_Interp_Spillways
-  Remote_Survey_Impoundment_Berms

0 125 250 500 Feet





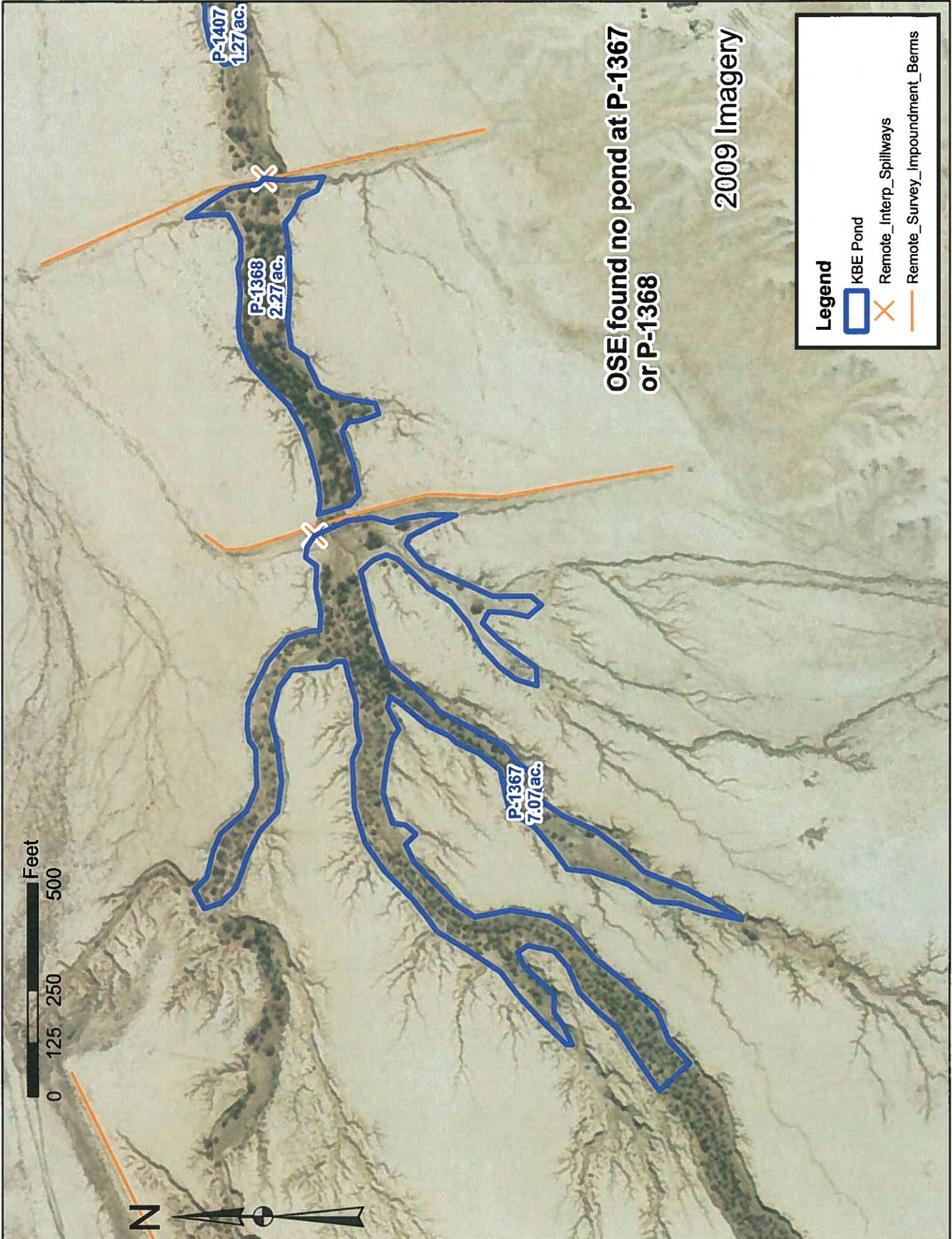
OSE found no pond at P-1133

USGS Quad Map

Legend

-  KBE Pond
-  Remote_Interp_Spillways
-  Remote_Survey_Impoundment_Berms





P-1407
1.27 ac.




P-1368
2.27 ac.

P-1367
7.07 ac.

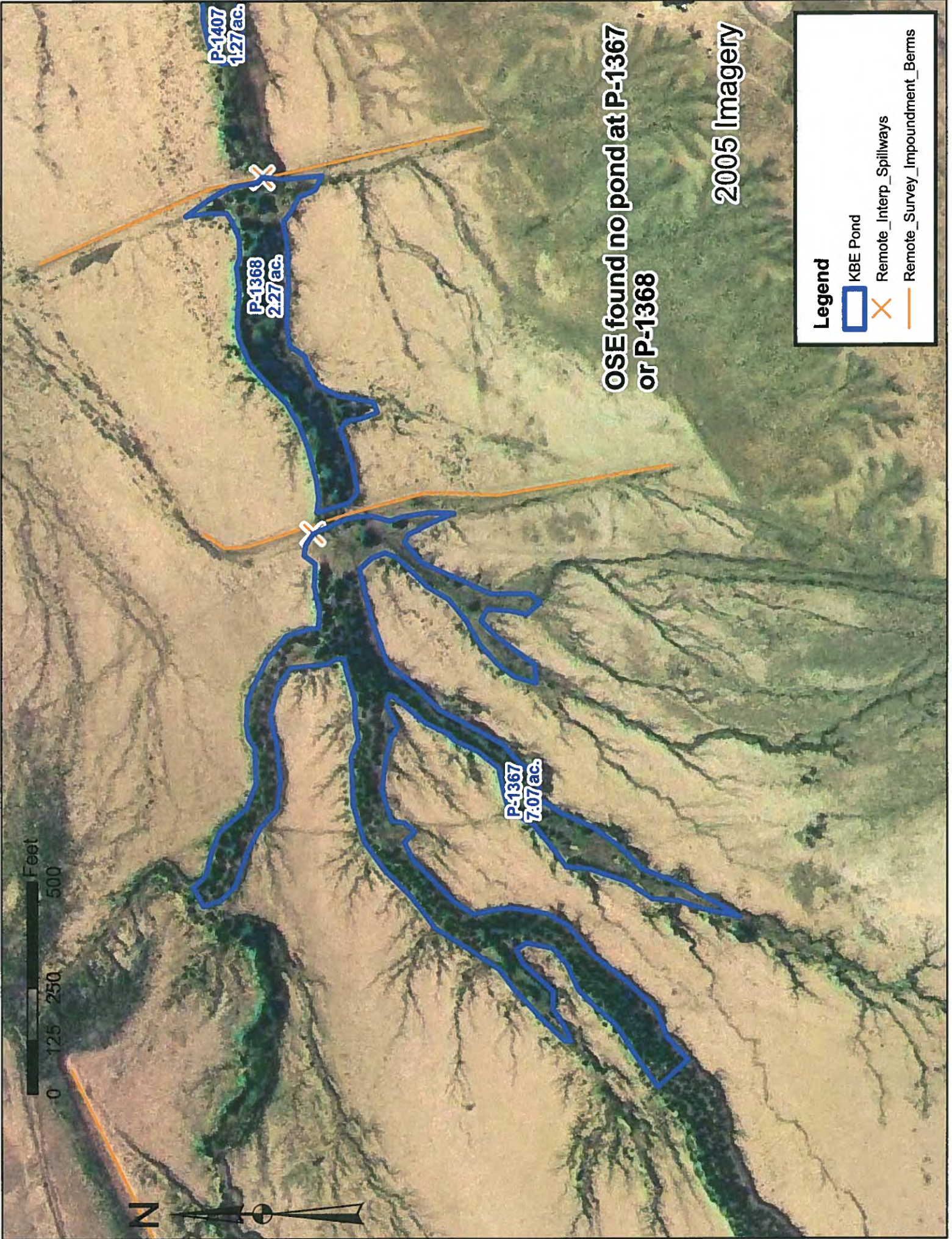
OSE found no pond at P-1367
or P-1368

2009 Imagery

Legend

-  KBE Pond
-  Remote_Interp_Spillways
-  Remote_Survey_Impoundment_Berms






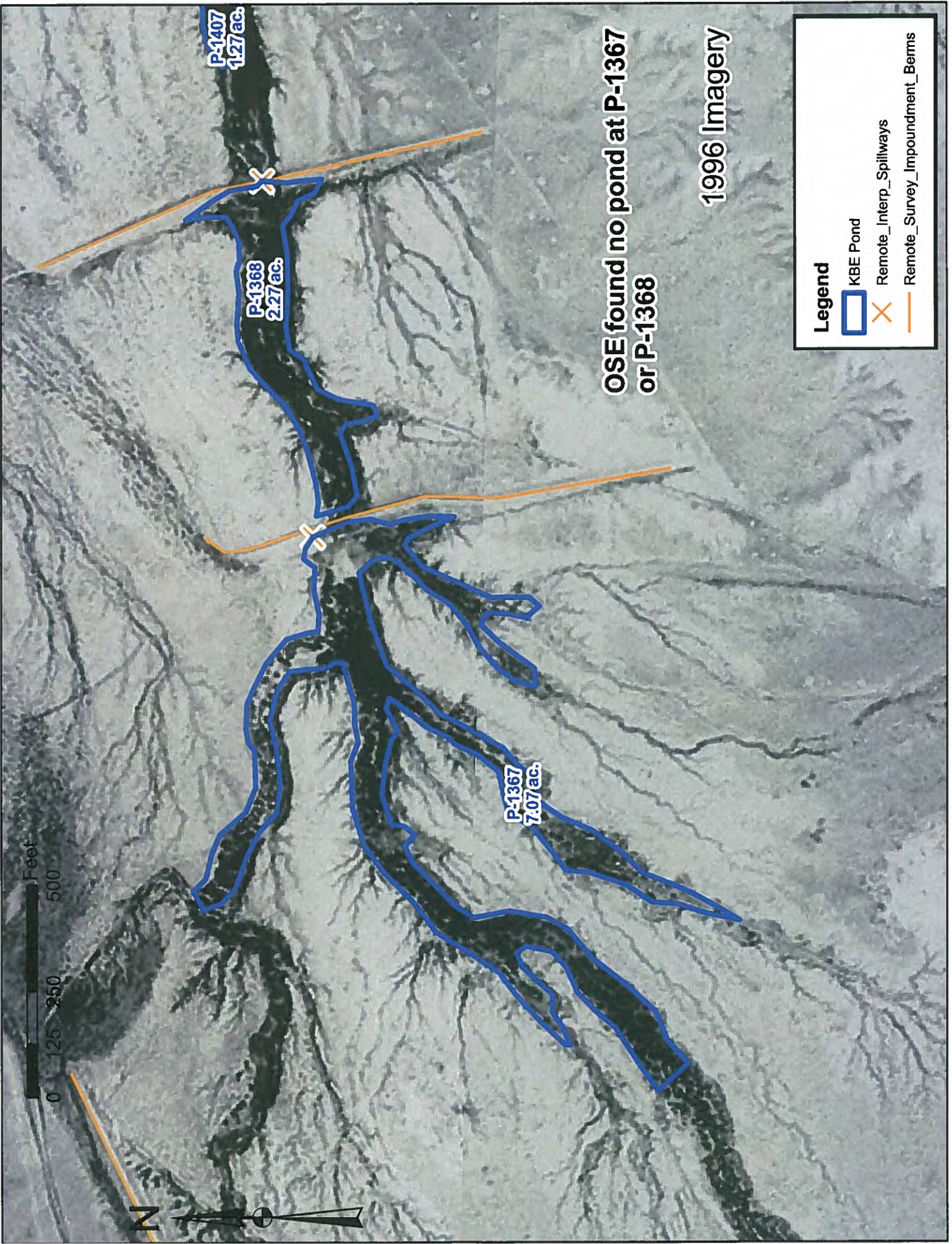


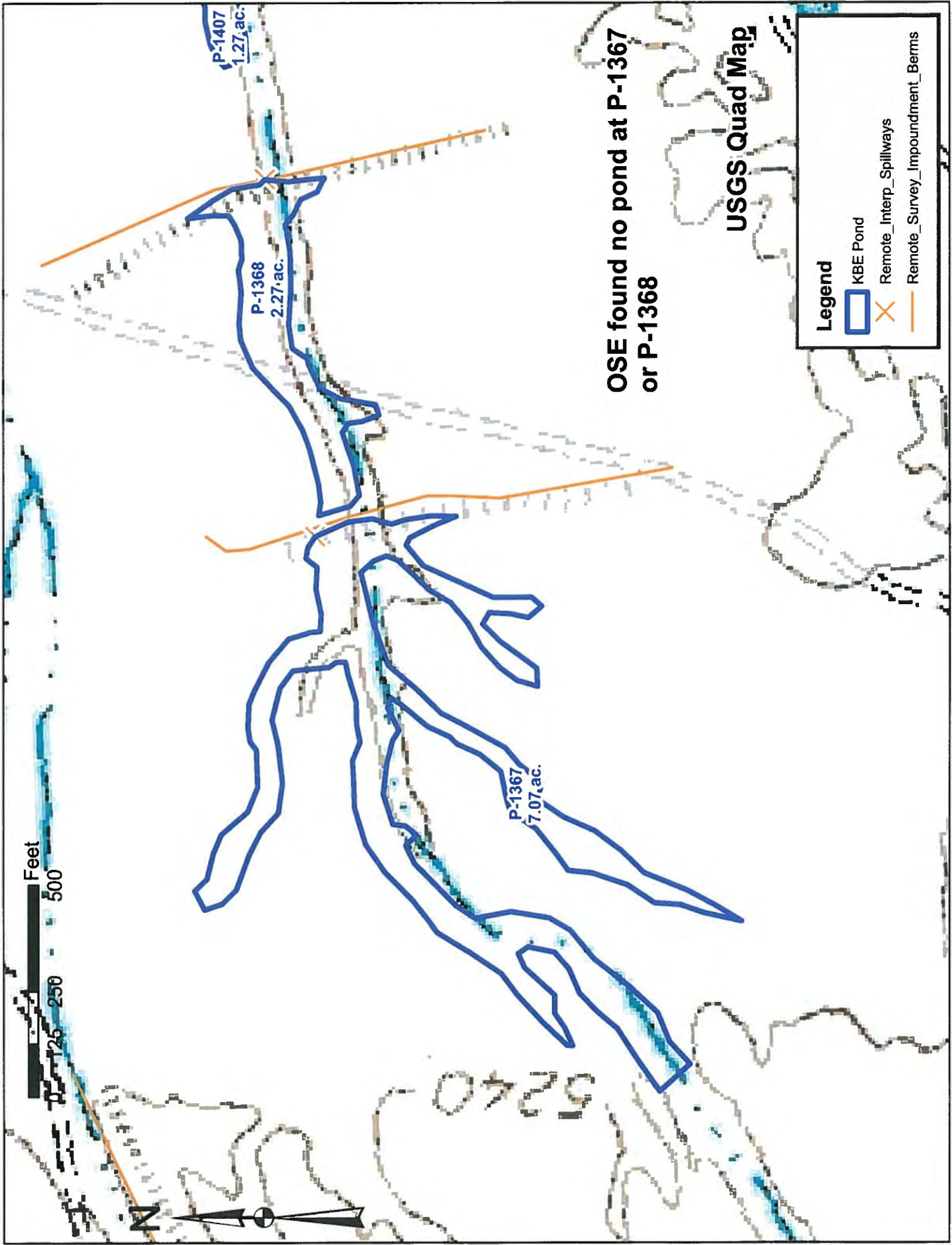
OSE found no pond at P-1367
or P-1368

2005 Imagery

Legend

-  KBE Pond
-  Remote_Interp_Spillways
-  Remote_Survey_Impoundment_Berms








OSE found no pond at P-1367
or P-1368

USGS Quad Map

Legend






-  KBE Pond
-  Remote_Interp_Spillways
-  Remote_Survey_Impoundment_Berms



P-5264
6 ac.

2009 Imagery

Legend

-  Field Survey KBE Pond
-  Remote_Interp_Spillways
-  Field_Survey_Spillways
-  Remote_Survey_Impoundment_Berms
-  Field_Survey_Impoundment_Berms



2005 Imagery

Legend

- Field Survey KBE Pond
- Remote_Interp_Spillways
- Field_Survey_Spillways
- Remote_Survey_Impoundment_Berms
- Field_Survey_Impoundment_Berms

0 125 250 500 Feet








P-5264
6 ac.



P-5264
6.00 ac.

1996 Imagery

Legend

-  Field Survey KBE Pond
-  Remote_Interp_Spillways
-  Field_Survey_Spillways
-  Remote_Survey_Impoundment_Berms
-  Field_Survey_Impoundment_Berms

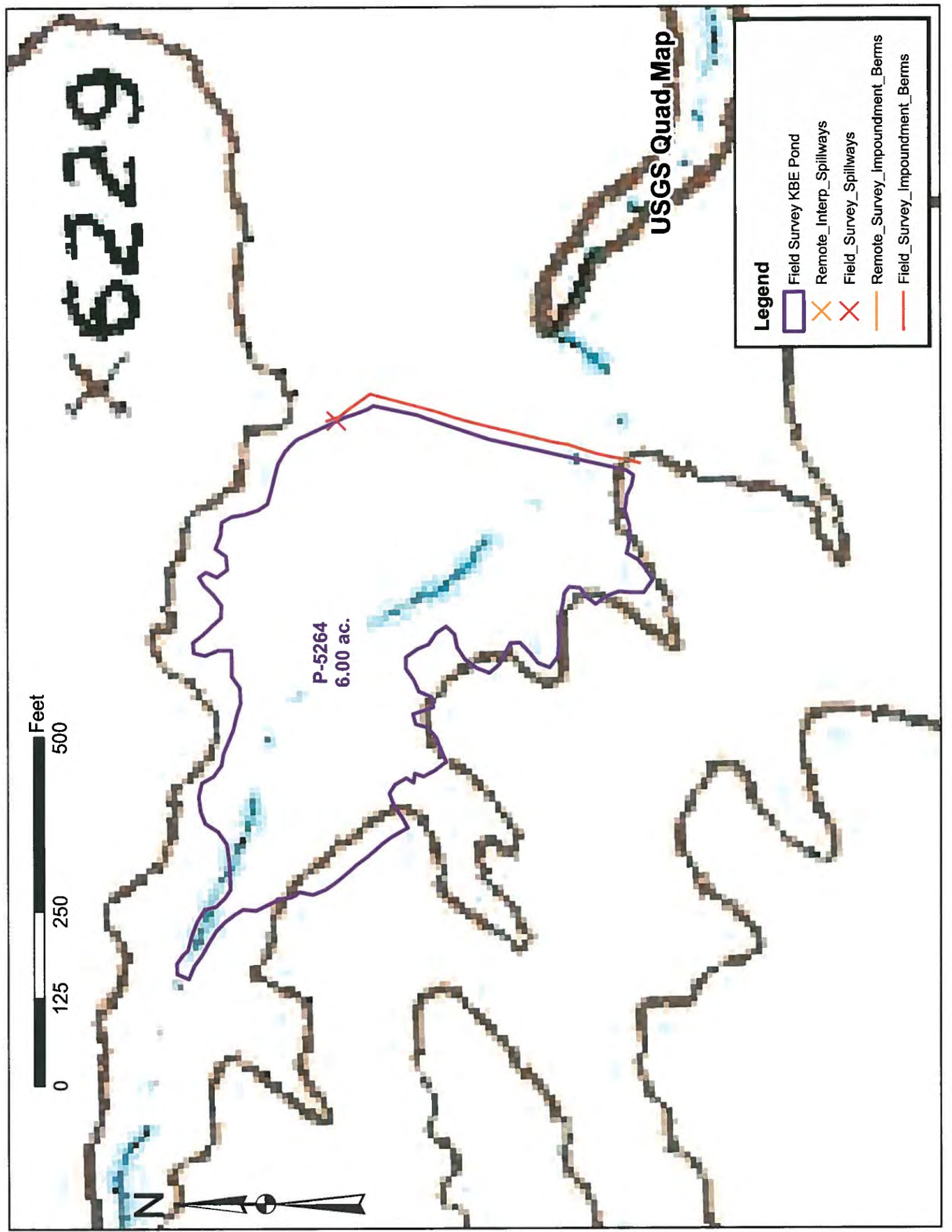
6229

USGS Quad Map

P-5264
6.00 ac.

Legend

- Field Survey KBE Pond
- Remote_Interp_Spillways
- Field_Survey_Spillways
- Remote_Survey_Impoundment_Berms
- Field_Survey_Impoundment_Berms



Section 2

Ponds mapped by KBE for which the OSE could not find any indications of ponding on the imagery, but did show up on the USGS 1:24K Quadrangle maps.



OSE found no pond

2009 Imagery

Legend

OSE Pond

KBE Pond

Remote_Interp_Spillways

Remote_Survey_Impoundement_Berms

2005 Imagery

Legend

OSE Pond

KBE Pond

Remote_Interp_Spillways

Remote_Survey_Impoundment_Berms

2.96 ac.

P-0985

7.06 ac.

0 125 250 500 Feet

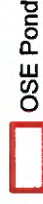




1996 Imagery



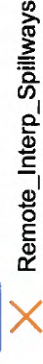
Legend



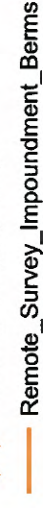
OSE Pond



KBE Pond



Remote_Interp_Spillways



Remote_Survey_Impoundment_Berms