MEMORANDUM

DATE: July 20, 2010

TO: Illinois EPA, Bureau of Land Division File

FROM: Lance Range, Project Manager, Office of Site Evaluation, Illinois EPA

SUBJECT: Use of GIS software

SITE NUMBER: 1210500002 – Marion County
Sandoval/Sandoval Zinc Company

A desktop Geographic Information System (GIS) was used to aid in locational and dimensional analysis of the Sandoval Zinc Company site. Specifically, GIS was used to evaluate dimensions of the site and site source, as a waste pile. GIS was also used to compare distances from the site to human populations and wetlands. Sample locations from previous investigations were identified using Illinois EPA's Trimble Pro XR Global Positioning System (GPS).

Dimensional of Site and Sources
GPS data from soil and sediment sampling locations along with metal concentrations results were overlain on aerial photographs and georeferenced topographical maps using the computer program ArcGIS produced by ESRI. Sources used for the aerial photographs and georeferenced topographical maps are as follows, respectively:

1. United States Geological Survey. Digital Orthophoto quarter Quadrangle, Marion County, northwest quarter of Centralia East quadrangle. In: Illinois Natural Resources Geospatial Data Clearinghouse at. http://www.isgs.uiuc.edu/nsdihome/webdocs/doq05/county/marion.html. 2005
2. United States Geological Survey. Digital Raster Graphic, Marion County, Centralia East quadrangle. In: Illinois Natural Resources Geospatial Data Clearinghouse at http://www.isgs.uiuc.edu/nsdihome/ISGSindex.html. 1993

Wetlands Analysis
The National Wetlands Inventory Map for the lower 48 states produced by the United States Fish and Wildlife was brought into ArcGIS for analysis. The U.S. FW provided a georectified scan of the National Inventory map which was reviewed for areas surrounding the Sandoval Zinc Company site and following the 15-mile TDL for the surface water pathway. GIS was used to determine the length of various types of wetlands frontage that were adjacent to the surface water pathway and Prairie Creek. These measurements were determined using ArcView license type with ESRI ArcMap 9.3.1 and ArcGIS Desktop 9.3.1 and data http://www.fws.gov/wetlands/Data/DataDownload.html for Illinois. All data downloaded

is in the Albers projection with a North American Datum (NAD) of 1983. Data from the U.S. Fish and Wildlife National Wetlands Inventory site was last updated on January 22, 2010. This wetland data was transposed onto the topological maps downloaded from http://www.isgs.uiuc.edu/nsdihome/webdocs/drgs/drgorder24bymap.html for Centralia East, Centralia West and Carlyle quadrangles. This map is depicted in Figure 7 of this HRS documentation record. Measurements of wetlands were determined using the ruler tool located in the toolbar of ArcView and following the flow of surface water pathway. All data was downloaded on March 15, 2010.

Level II concentrations of source related contaminants occur within a 3211.5 perimeter of wetlands and 11.2 miles of wetlands total frontage was identified within the PPE and the 15 mile TDL (U.S. FW).

References

1. ESRI. ESRI Data & Maps 2002, An ESRI White Paper. Electronic Report at http://support.esri.com/index.cfm?fa=lnowledgebase.whitepapers.viewPaper&PID=16&MetalD=1292. Accessed December 2007.
2. U.S. Fish and Wildlife Service. CONUS wet poly. Geospatial Vector Digital Data. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Department of the Interior, Fish and Wildlife Service, Washington D.C. FWS/OBS-79/31. July 2007. At http//wetlandswms.er.usgs.gov/wmsconnector/com.esri.wms.Esrimap?ServiceName=USFWS_WMS_CONUS_Wetlands&. Accessed August 11, 2008.