



**Troy C. Holm**  
Lead Civil 3D Designer

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## Education

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Associates, Computer Aided Drafting and Design, 1994

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## Experience Summary

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Mr. Holm has over 24 years of experience in CAD design, drafting, quantity calculation, 3D visualization and animation in the Civil and Mining Engineering industries. His experience has been applied within the mining industry to tailings storage facilities (TSF), diversion channels, heap leach pads, waste rock storage, various ponds, building pads, pipeline layouts, plant design and layout, access and haul roads and sediment control channels, mining reserve estimation, and site and view-shed studies. In addition to an extensive background in CAD, he has produced numerous mine site animations and visualization projects for various sites domestically and internationally. He has extensive experience with civil design programs such as Autodesk Civil 3D, Autodesk 3DsMax, ArcGIS, Global Mapper, and Quicksurf. With a thorough background and understanding of drafting principles and expertise including standardization and implementation of 3D terrain modeling, site grading, and analysis, Troy enables the provision of full-service CAD and visualization support through all stages of the engineering project from conceptual to As-Built.

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## Project Experience

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### ***Mine Tailings / Waste Facilities***

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#### **NBTDF STAGE 11B TAILINGS IMPOUNDMENT, BARRICK GOLDSTRIKE MINE | NEVADA**

CAD design for North Block Tailings Disposal Facility (NBTDF) Stage 11B expansion at Barrick's Goldstrike Mine. (Tierra Group, 2018)

#### **TSF3 STAGE 4 TAILINGS IMPOUNDMENT RAISE, BARRICK GOLDSTRIKE MINE | NEVADA**

CAD design for TSF3 Stage 4 raise at Barrick's Goldstrike Mine. (Tierra Group, 2018)

#### **DOE RUN, SWEETWATER MINE | MISSOURI**

CAD design for the Sweetwater TSF 1138 raise. (Tierra Group, 2017)

#### **DOE RUN, SWEETWATER MINE | MISSOURI**

CAD design for the Sweetwater TSF 1115 raise As-Built Drawings. (Tierra Group, 2017)

#### **AMERICAN GYPSUM | COLORADO**

CAD design for access road. (Tierra Group, 2017)

#### **MT. TODD GOLD MINE | AUSTRALIA**

CAD design support for pre-feasibility level studies of an existing and new TSF. (Tetra Tech, 2010)

#### **KURISKOVA TOURNIGAN MINING OPERATION ANIMATION | SLOVAKIA**

Produced a mine operation animation for the proposed Tournigan Uranium Mine in Slovakia. Project included an interactive flash program to better educate the public on the overall process and purpose of uranium mining and the energy process. (Tetra Tech, 2010)

#### **NEVADA COPPER COMPANY PUMPKIN HOLLOW | NEVADA**

CAD design and yearly phasing of a phased dry stack TSF. (Vector Colorado, 2009)

#### **LA LIBERTAD MINE, LA ESPERANZA TSF | LA LIBERTAD, NICARAGUA**

CAD design and drawings for a downstream-raised, geosynthetic-lined TSF utilizing a mechanically stabilized earth (MSE) wall to raise the dam crest vertically. (Tetra Tech, 2008)

**CHINCHÁN SOUTH DRY STACK TAILINGS STORAGE FACILITY | SAN MATEO, PERÚ**

CAD design and drawings of dry stack TSF. (Tetra Tech, 2008)

**MT. TODD TAILINGS STORAGE FACILITY | AUSTRALIA**

CAD design of multiple large TSFs for pre-feasibility including possible expansion and design of new facility. (Tetra Tech, 2008)

**VISTA GOLD PAREDONES-AMARILLOS MINE-LIFE CYCLE ANIMATION | MEXICO**

Produced a life of mine animation of the proposed Paredones' Mine life on the Baja Peninsula. (Tetra Tech, 2008)

**U.S. ENERGY CORP. LUCKY JACK MINE LIFE ANIMATION | COLORADO**

Produced a mine life animation for the proposed Lucky Jack Mine site which was used for public relations and to assist regulators in reviewing the Environmental Impact Assessment (EIA). (SRK, 2007)

**NEWMONT AKYEM MINE LIFE ANIMATION | GHANA**

Produced a mine life animation for the proposed Akyem Mine site which was used for public relations and to assist regulators in reviewing the EIA. Included three physical models of the site with inserts of models to depict time periods in the mine's life. (Vector Colorado, 2006)

**AUGUSTA RESOURCES TAILINGS AND WASTE ROCK IMPOUNDMENT | ARIZONA**

CAD design and drawings for a proposed staged tailings and waste rock co-disposal facility. Viewshed analysis and 3D animation of a site drive-by from a scenic highway to show visual impact and progressive reclamation of side slopes. (Vector Colorado, 2005)

**BARRICK GOLDSTRIKE TSF3 TAILINGS IMPOUNDMENT | NEVADA**

CAD design for TSF3 expansion at Barrick's Goldstrike Mine. (Vector Colorado, 2005)

**BARRICK PASCUA LAMA TAILINGS IMPOUNDMENT | ARGENTINA**

CAD design and drawings for a TSF in the Andes Mountains between Argentina and Chile. (Vector Colorado, 2005)

**CANDENTE CANARIACO | PERÚ**

CAD design and siting for the proposed Canariaco TSF. (Vector Colorado, 2005)

**B2 GOLD EL LIMON TAILINGS IMPOUNDMENT | NICARAGUA**

CAD design and drawings for the MSE vertical expansion of the El Limon TSF. (Vector Colorado, 2005)

**PASCUA LAMA PROJECT STABILITY ANALYSES | WESTERN ARGENTINA**

CAD design and drawings for a tailings dam and a water storage dam located in the high Andes near the Chile-Argentina border. (Vector Colorado, 2005)

**PACIFIC RIM EL DORADO TAILINGS IMPOUNDMENT | EL SALVADOR**

CAD design and drawings for the El Dorado TSF. This was the first TSF permitted in El Salvador. Produced a mine life animation for this site which was used for public relations and to assist regulators in reviewing the EIA. (Vector Colorado, 2004)

**BREAKWATER RESOURCES SOLEDAD TAILINGS IMPOUNDMENT | HONDURAS**

CAD design and drawings for the design of the Soledad tailings impoundment and facilities. (Vector Colorado, 2003)

**BREAKWATER RESOURCES POZO AZUL TAILINGS IMPOUNDMENT | HONDURAS**

CAD design and drawings for various stages of the design of the Pozo Azul TSF. Produced a life cycle animation of the Pozo Azul TSF for use in a Tailings Mine Waste 2002 presentation. (Olsson Associates, 2002)

***Heap Leach Facilities***

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**BELLAVISTA | COSTA RICA**

CAD drawings for heap leach landslide mitigation. (Tetra Tech, 2008)

**HEAP LEACH FACILITY PRELIMINARY DESIGN | ARIZONA**

Preliminary design drawings and quantity calculations of a heap leach facility. (Vector Colorado, 2004)

***Hydraulics / Hydrology***

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**MIDAS GOLD, STIBNITE | IDAHO**

Diversion channel design trade-off options for the Stibnite site. (Tierra Group, 2018)

**HOMESTAKE MINING COMPANY, McLAUGHLIN MINE | CALIFORNIA**

CAD design for multiple diversion, erosion, and pond improvements. (Tierra Group, 2017)

**AMERICAN GYPSUM | COLORADO**

CAD design for sediment control pond and mitigation. (Tierra Group, 2017)

**NEWMONT LEEVILLE PASTE BACKFILL PLANT | NEVADA**

3D modeling and construction drawings for tanks, piping routing, and components for construction of a paste backfill plant at Newmont's Leeville Mine Site. (Paterson & Cooke, 2016)

**UMM WU'AL PHOSPHATE PROJECT | SAUDI ARABIA**

3D model and feasibility layout drawings of tanks, conveyors, cyclones, thickeners, pumps, and pipe routing for a conveyed filtered tailings system. (Paterson & Cooke, 2015)

**HYCROFT GOLD & SILVER MINE | NEVADA**

Detailed design drawings of a tailings delivery system with two operating pump trains. (Paterson & Cooke, 2012)

**CHESAPEAKE MINERALS | MEXICO**

Feasibility design drawings for long distance slurry and water pipelines. (Paterson & Cooke, 2011)

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**Presentations / Publications**

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**Holm T** (Co-Author), 2005. *Virtual Reality Animation of The Proposed El Dorado Mine In El Salvador Assists Regulators in Reviewing An EIA*. SME Annual Meeting 28 February – 2 March 2005, Salt Lake City, Utah.

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**Employment History**

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<b>CURRENT EMPLOYER</b>	<b>TIERRA GROUP INTERNATIONAL, LTD.</b>
<b>POSITION</b>	Lead Civil 3D Designer
<b>YEARS</b>	2016 to Present
<b>EMPLOYER</b>	<b>PATERSON &amp; COOKE</b>
<b>POSITION</b>	CAD Manager
<b>YEARS</b>	2011 to 2016
<b>EMPLOYER</b>	<b>SELF-EMPLOYED</b>
<b>POSITION</b>	CAD Design Consultant
<b>YEARS</b>	2006 to 2011
<b>EMPLOYER</b>	<b>VECTOR COLORADO, LLC</b>
<b>POSITION</b>	Lead CAD Designer/Animator
<b>YEARS</b>	2003 to 2006

<b>EMPLOYER</b>	<b>OLSSON ASSOCIATES</b>
<b>POSITION</b>	Lead CAD Designer
<b>YEARS</b>	2001 to 2003
<b>EMPLOYER</b>	<b>MONTGOMERY WATSON</b>
<b>POSITION</b>	CAD Designer
<b>YEARS</b>	1999 to 2001
<b>EMPLOYER</b>	<b>STEFFEN ROBERTSON AND KIRSTEN (U.S.), INC.</b>
<b>POSITION</b>	Computer Aided Draftsman
<b>YEARS</b>	1996 to 1999
<b>EMPLOYER</b>	<b>THIRD COAST ARCHITECTS</b>
<b>POSITION</b>	Computer Aided Draftsman
<b>YEARS</b>	1994 to 1996