# Statement of Qualifications

June, 2005

# Gasch & Associates

## *Engineering Geophysics*

***Since 1969***

**3174 Luyung Drive**
**Building #2**
**Rancho Cordova, California 95742**
**916.635.8906**
**www.geogasch.com**

# Statement of Qualifications

Gasch & Associates
Engineering Geophysics

## Forward

Gasch & Associates (G&A) is located in Rancho Cordova, a suburb of Sacramento near historic Folsom, California. G&A provides geophysical services for a wide variety of applications related to the engineering, geotechnical, environmental and exploration professions. We invite you to visit our website (www.geogasch.com) for a brief tour of our services, or to contact us via e-mail at info@geogasch.com.

You may also contact us by mail or phone at:

Gasch & Associates
3174 Luyung Drive
Building #2
Rancho Cordova, California 95742
916.635.8906 FAX: 916.635.8907

## Science

Geophysical methods are tools used to non-invasively and non-destructively detect and measure various physical properties of the earth. These physical properties, along with a good understanding of the local geologic conditions, reveal the geologic characteristics of the subsurface.

Jerrie W. Gasch, founder, is still actively involved in planning field strategies and data collection, as well as interpretation and application of findings. With over forty years of experience as a geologist and geophysicist, Mr. Gasch is still at the heart of the G&A team.

G&A prides itself on an exceptionally high quality product delivered in a timely manner. We have earned the reputation of making our clients look good by doing what it takes to get the job done right. Science and integrity are our cornerstones.

Let our staff of California Registered Geologists, Geophysicists and Engineering Geologists design a professional geophysical investigation to solve your geo-science problems.

# Statement of Qualifications

Gasch & Associates
Engineering Geophysics

## Mission Statement

Gasch & Associates is dedicated to providing quick, cost effective solutions to engineering, geotechnical and environmental problems. We emphasize the *science* of geophysics by integrating geophysical techniques appropriate for each situation. Cutting edge technology and a strict eye for detail produce a product that speaks for itself.

## Introduction

Founded in 1969, Gasch & Associates (G&A) has been providing geophysical consulting services to the engineering, groundwater, environmental and legal professions for over 30 years. The experience of thousands of geological and geophysical investigations throughout the western hemisphere and the Pacific Rim gives G&A insight into the appropriate application of geophysical techniques.

Gasch & Associates provides the following geophysical methods:

- high resolution 2-D & 3-D seismic refraction and reflection
- 2-D and 3-D electrical resistivity
- induced polarization (IP)
- magnetics (mag)
- electromagnetics (EM)
- ground penetrating radar (GPR)
- gravity
- blast, vibration and acoustic monitoring

## Strengths

Gasch & Associates has professional staff of licensed geophysicists, geologists or engineering geologists with experience totaling over 100 years in the geophysical and geological disciplines. The time-tested success of Gasch & Associates can be attributed to our many strengths, including:

- state-of-the-art instrumentation
- cutting edge processing and drafting software
- geophysical method integration
- geological expertise
- excellent communication and project management
- extensive project experience

Through repeat business, year after year, our clients have proven that we provide a valuable service to them.

# Partial List of Clients

Gasch & Associates
Engineering Geophysics

AMAX Gold, NV
Advanced Geosciences
Applied Engineering & Geology
Aquatic Pool Design
BP AMOCO Corp.
Bechtel Corporation, Intl.
Brown & Caldwell Consultants
C.A. Rasmussen Inc.
C.C. Myer Construction
CH2M-Hill
California Dept. of Water Resources
Camp, Dresser & McKee
Capitol Oil Corporation
Carlton Engineering
Cherrington Horizontal Drilling
Chevron USA
City of Lincoln, CA
City of San Jose, CA
County of Colusa, CA
County of Placer, CA
County of El Dorado, CA
County of Monterey, CA
County of Sacramento, CA
DDD Energy, Inc.
DPR Construction
Del Webb Corporation
Department of Toxic Substance Control, CA
Domson Constructors, WY
ENSR Consulting
East Bay Municipal Utility District
El Dorado County Dept. of Transportation
Elk Grove Unified School District, CA
Environmental and Turf Services, Inc.
Environmental Protection Agency
España Geotechnical
Flour Global Services
G.W. Consulting Engineers
Geocon Consultants
Geoimagery
Granite Construction Co.
Graniterock
Halliburton Energy Services
Harrison, Kemp & Jones, Atty.'s at Law
Jenkins & Gilcrest, Atty.'s at Law
Kerr McGee
Kiewit Pacific Co.
Kleinfelder
Kinder-Morgan Energy Partners
Lakes Gaming, Inc.
Los Rios Community College District
Luhdorff & Scalmanini
MCI Worldcom
MacKay & Somps
McLaughlin Water Engineers, Ltd.
Minera Rayrock (S.A.)
Newmont Gold Co.
Oceaneering International
Pacific Gas & Electric
Placer County Water Agency
Placer Dome
Psomas
Reynold's Metals Company
Sacramento Municipal Utility District
Sanders & Associates Geostructural Engineering
San Luis/Delta-Mendota Water Authority
Schlumberger
Shell Oil
Signature Properties
Snyder, Cornelius & Hunter, Law Office
Spink Corporation, The
State of California
State of Nevada
Stevens, Ferrone & Bailey Engineering
Syblon-Reid Engineering Contractor
Teichert Construction
Third Generation Drilling & Blasting
Tsakopoulos Land Development
Turlock Irrigation District
URS Group
U.S. Army Corps of Engineers
U.S. Bureau of Indian Affairs
U.S. Bureau of Land Management
U.S. Bureau of Reclamation
U.S. Dept. of Defense
U.S. Dept of the Navy
U.S. Geological Survey
US Home Corporation
University of California
Van Horne Law Offices
Wallace-Kuhl & Associates
Waste Management, Inc.
Western Blasting Technology
WesternGeco
Woodward-Clyde Consultants
Yubacon, Inc.
Youngdahl Consulting Group

# Geophysical Applications

Gasch & Associates
Engineering Geophysics

Selection of the appropriate geophysical techniques and methodologies is crucial to every geophysical investigation.

Thumb through the next few pages.

Color tabs indicate the appropriate geophysical techniques for each application.

**Geologic Structure / Fault Detection / Landslide Analysis / Geological Hazard Evaluation**

**Stratigraphy & Lithology / Bedrock Delineation / Rippability Studies / Rock Strength Analysis**

**Groundwater Exploration / Water Table / Subsurface Water Conduits / Pathways**
**Water Well Location / Dam & Canal Leakage**

**Void Detection / Location of Historic Mine Workings / Cave & Sinkhole Detection**

**Landfill Boundaries / Contaminant Plume Detection Delineation & Pathways**

**Shear Wave Analysis / Elastic Moduli / Response Spectra & Tripartite Analysis**

**Underground Storage Tank (UST) Locating / Lost Pipe & Boring Locating**
**Archaeologic Exploration / Forensic Geophysics**

**Oil & Gas Exploration / Mineral Exploration**

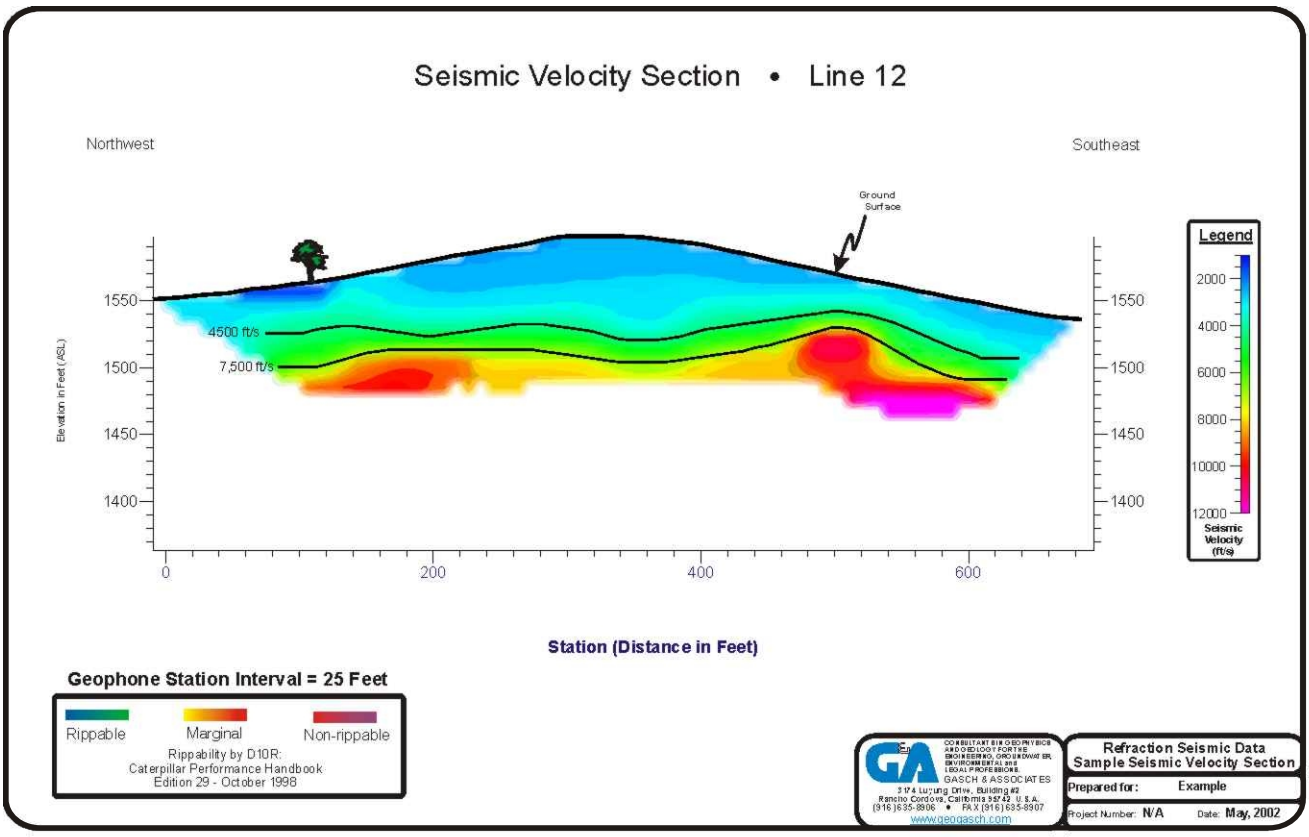
**Blast Vibration Monitoring / Acoustic Monitoring**
**Heavy Equipment & Truck Vibration Monitoring**

# Seismic Refraction

Gasch & Associates
Engineering Geophysics

The Refraction Seismic method is able to accurately distinguish bedrock from the overlying sediment because of contrasting seismic velocities.

This sample cross section from a Refraction Seismic survey demonstrates G&A's ability to accurately define lateral, as well as horizontal changes in seismic velocity.



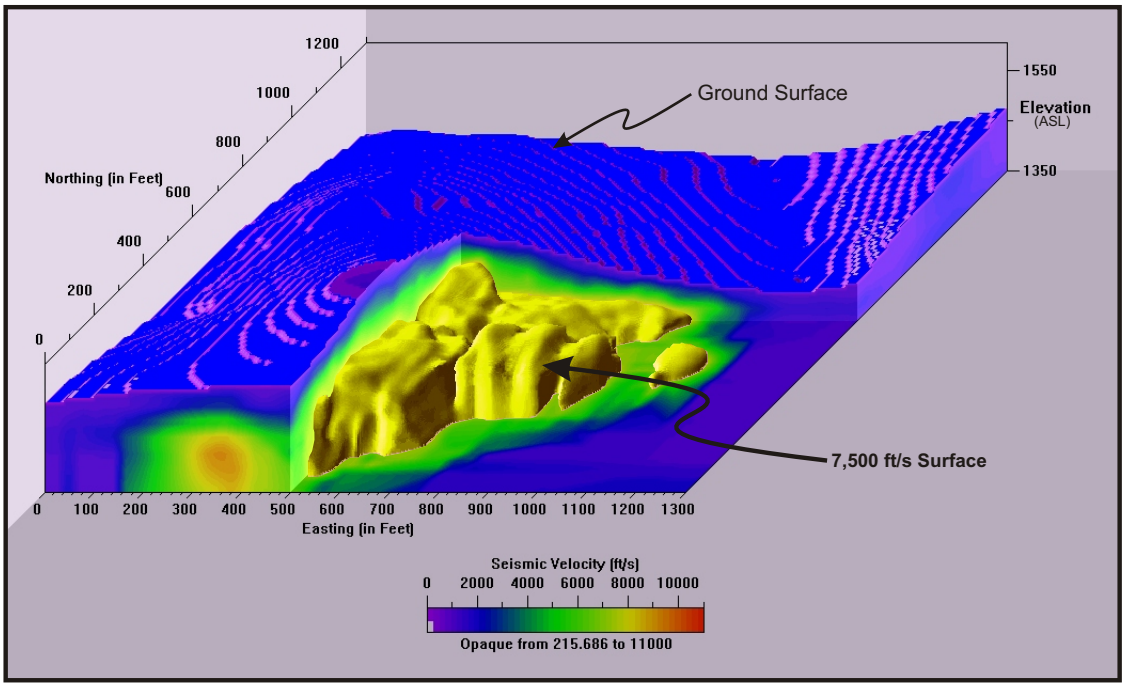

When detailed, high-resolution data are necessary, many shot points may be required. Our software is capable of processing up to 300 shot points, increasing the subsurface ray-path coverage many times over conventional surveys with only 5 or 7 shotpoints.

# 3-D Seismic Refraction Modeling

Gasch & Associates
Engineering Geophysics

This 3-D Refraction Seismic model was created in order to visualize the 3-D nature of the site rippability (excavatibility) characteristics, and to allow for the most economically advantageous construction strategy.

Three Dimensional Seismic Velocity Model: Cutaway View with 7,500 ft/s Surface




Perspective View from the Southeast


CONSULTANTS IN GEOPHYSICS AND GEOLOGY FOR THE ENGINEERING, GEOTECHNICAL ENVIRONMENTAL and LEGAL PROFESSIONS
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www.geogasch.com


3-D Refraction Seismic Model

*Prepared for:* Example

Project Number: N/A Date: N/A

Solid Modeling was achieved through the Inverse-Distance Weighting Algorithm. This algorithm forms a regular, 3-D grid of values to create a solid model which assigns a seismic velocity value (v) to each node (x,y,z value) within the volume.

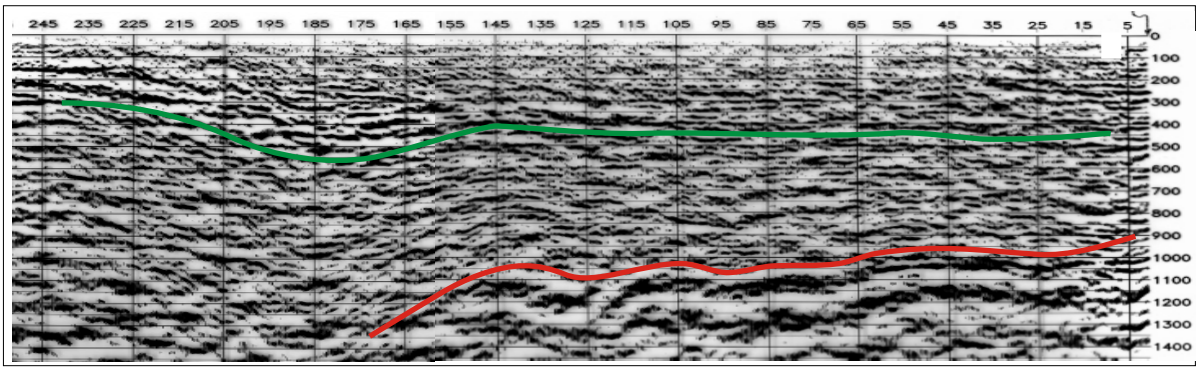
# Seismic Reflection

Gasch & Associates
Engineering Geophysics

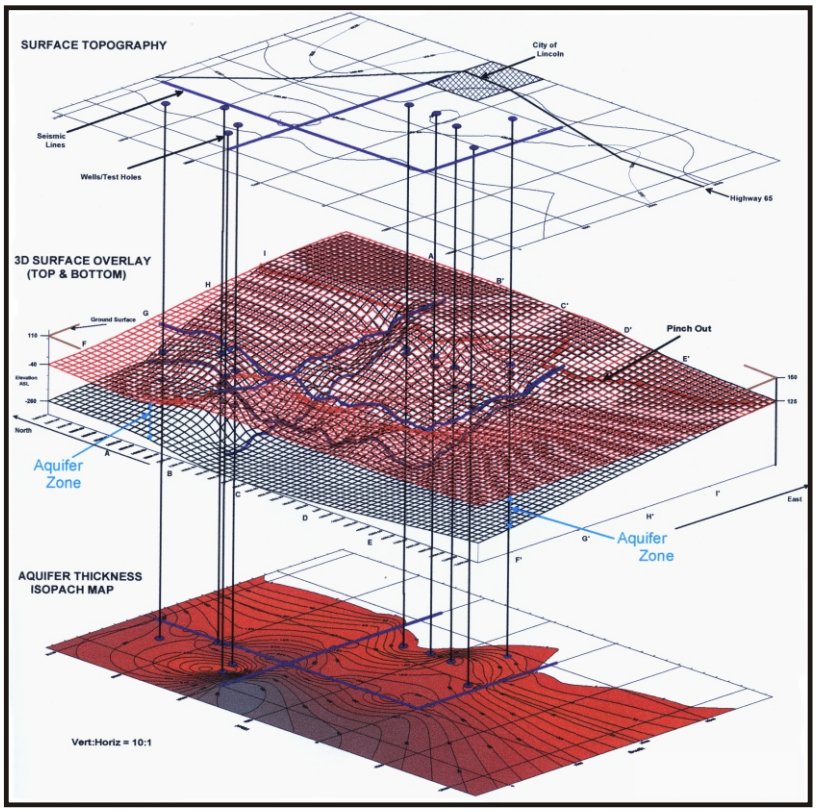
The Reflection Seismic Method is often used to define the contact between basement rock and the overlying formations. Features such as faulting or basement channels can often be identified.

South North

**Reflection Seismic Line**




This 2½-D Model was created using data from seismic reflection, borehole logs and exposed geology.



# Data Processing

Gasch & Associates
Engineering Geophysics


Our new Seiswulf™ Cluster, parallel processing supercomputer chews through enormous quantities of data at an amazing rate. The Linux operating system provides a stable platform for billions of processing iterations.

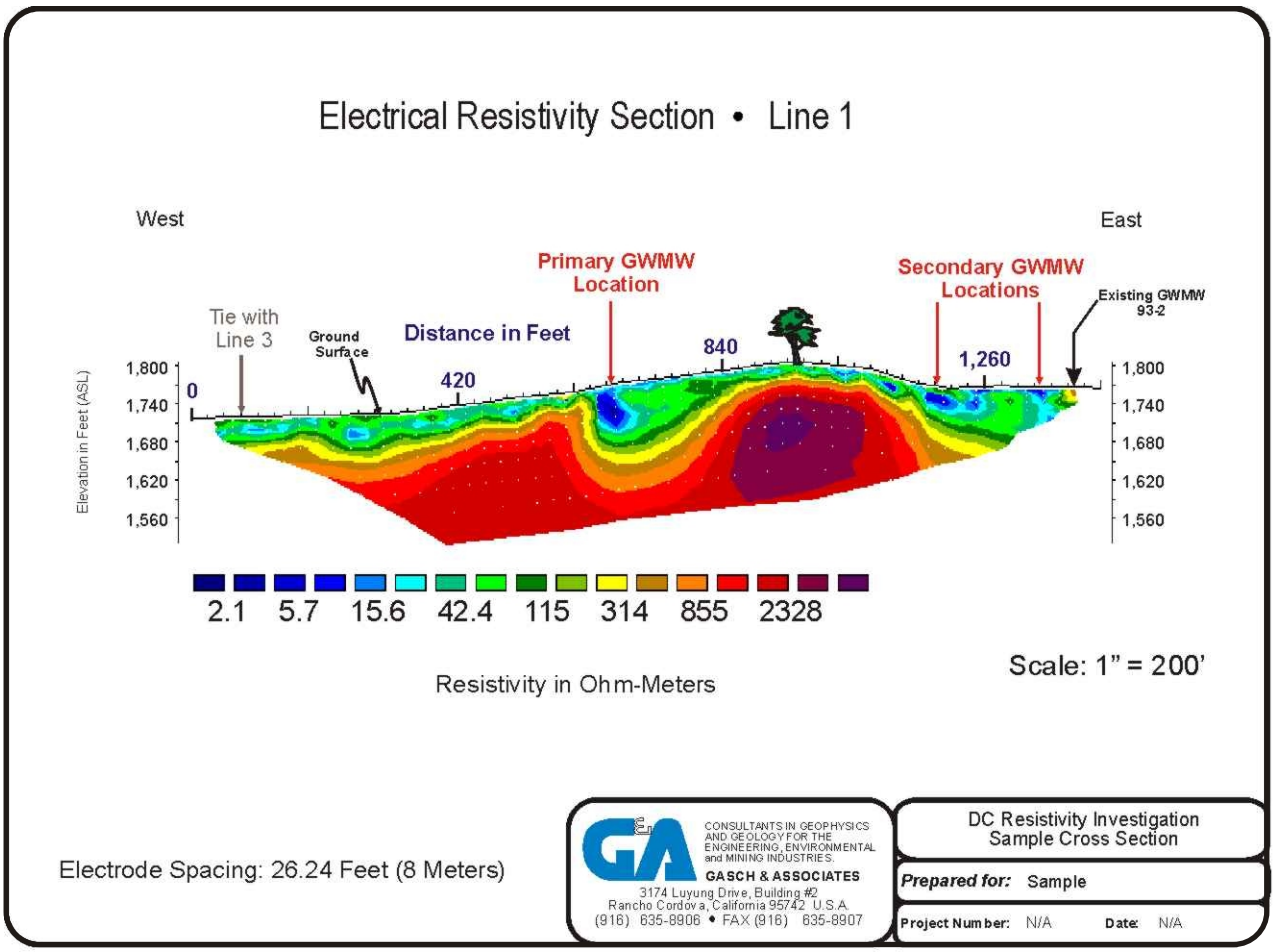
Specially designed through a collaboration between Optimsoftware™ and CUBIX™ to run some of the worlds most sophisticated two-dimensional and three-dimensional seismic refraction inversion and optimization software, the “Wulf” boasts over 20 Gflops of computing power.

The Seiswulf also runs Optimsoftware’s newest three-dimensional Statics package for seismic reflection processing. The statics corrections provided are some of the most accurate possible, due to the statics model provided by the true three-dimensional inversion and optimization modeling.

# 2D - Electrical Resistivity

Gasch & Associates
Engineering Geophysics

Our state-of-the-art, automatic DC Electrical Resistivity (ER) unit is capable of quickly collecting thousands of data points in any of the standard configurations.

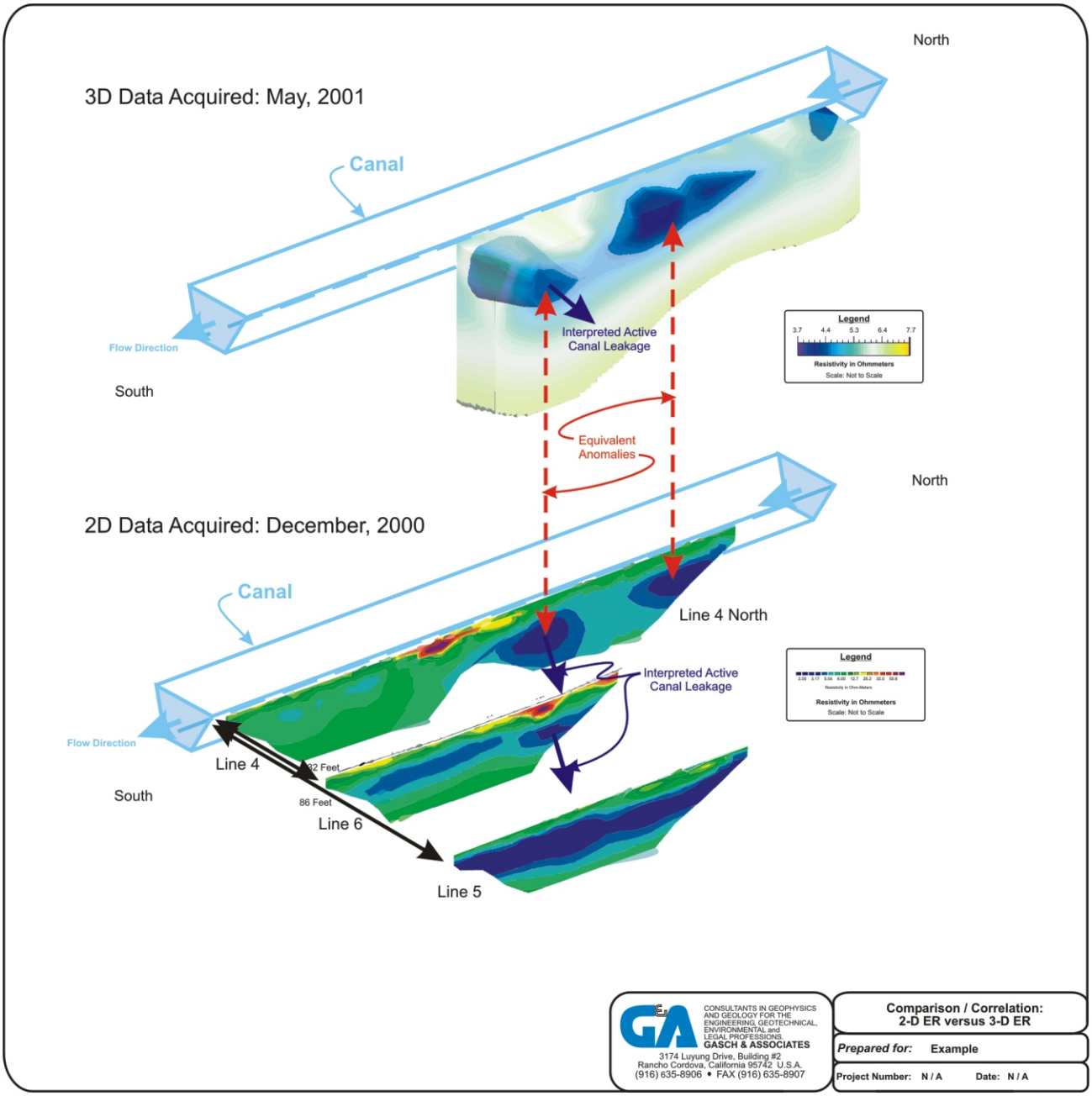



Data are processed to produce color cross-sections which indicate variation of earth resistivity values with depth. Resistivity values are greatly affected by moisture and mineral variations in the sub-surface, which makes the ER method a valuable tool for leakage detection, groundwater and mineral exploration.

# 3D - Electrical Resistivity

Gasch & Associates
Engineering Geophysics

With electrodes laid out on the surface in a grid, true three dimensional resistivity measurements can be obtained. Processing of these data produce a model which is more accurate than 2-D surveys because both transverse and lateral variations in resistivity can be defined.

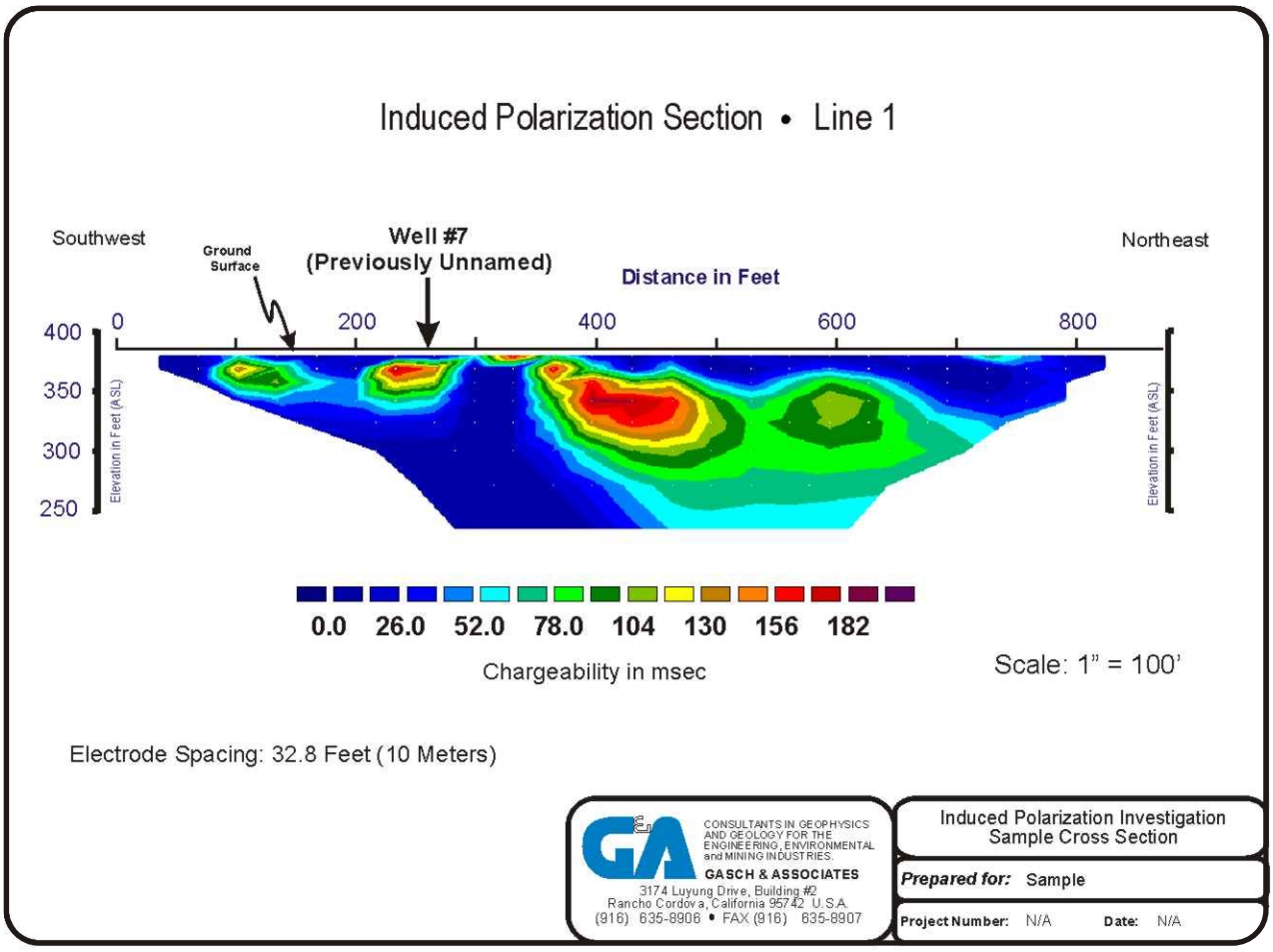



G&A can produce a three dimensional ER model which will rotate in space so that the model may be viewed from any direction, which can be played on the Windows Media Player.

# Induced Polarization

Gasch & Associates
Engineering Geophysics

The Induced Polarization (IP) phenomenon is observed as sub-surface materials become electrically polarized when energized with an electric current. Metallic minerals exchange ions with electrolytes at the surface contact, creating an opposing current. The extra voltage necessary to drive current through this barrier is called the “overvoltage.” When the current is switched off, these electrochemical voltages dissipate, but not instantly. The study of the decaying capacitance as a function of time is known as “time domain” IP, and relates to the concentration of metallic minerals and clays along the current path.




The simultaneous acquisition and later correlation of electrical resistivity (ER) and induced polarization (IP) data can be extremely valuable in groundwater exploration. Although the ER method indicates the location of water bearing strata, it does not determine whether this water is locked up in clays or moving freely through porous and permeable sands, gravels or fractures. The IP method indicates where clays exist, and when used in conjunction with ER, can indicate the location of higher transmissivity, water saturated material.

# Ground Penetrating Radar

Gasch & Associates
Engineering Geophysics

Ground Penetrating Radar (GPR) uses rapidly pulsed, high frequency (approximately 25 to 1,500 MHz) electromagnetic radiation (radio waves) to image the subsurface. This method focuses electromagnetic pulses into the ground. These transmitted pulses reflect off of subsurface interfaces between materials with differing dielectric properties and are then detected by the receiver. Such interfaces can be created by subsurface objects such as piping and conduit, as well as by air or water filled voids.

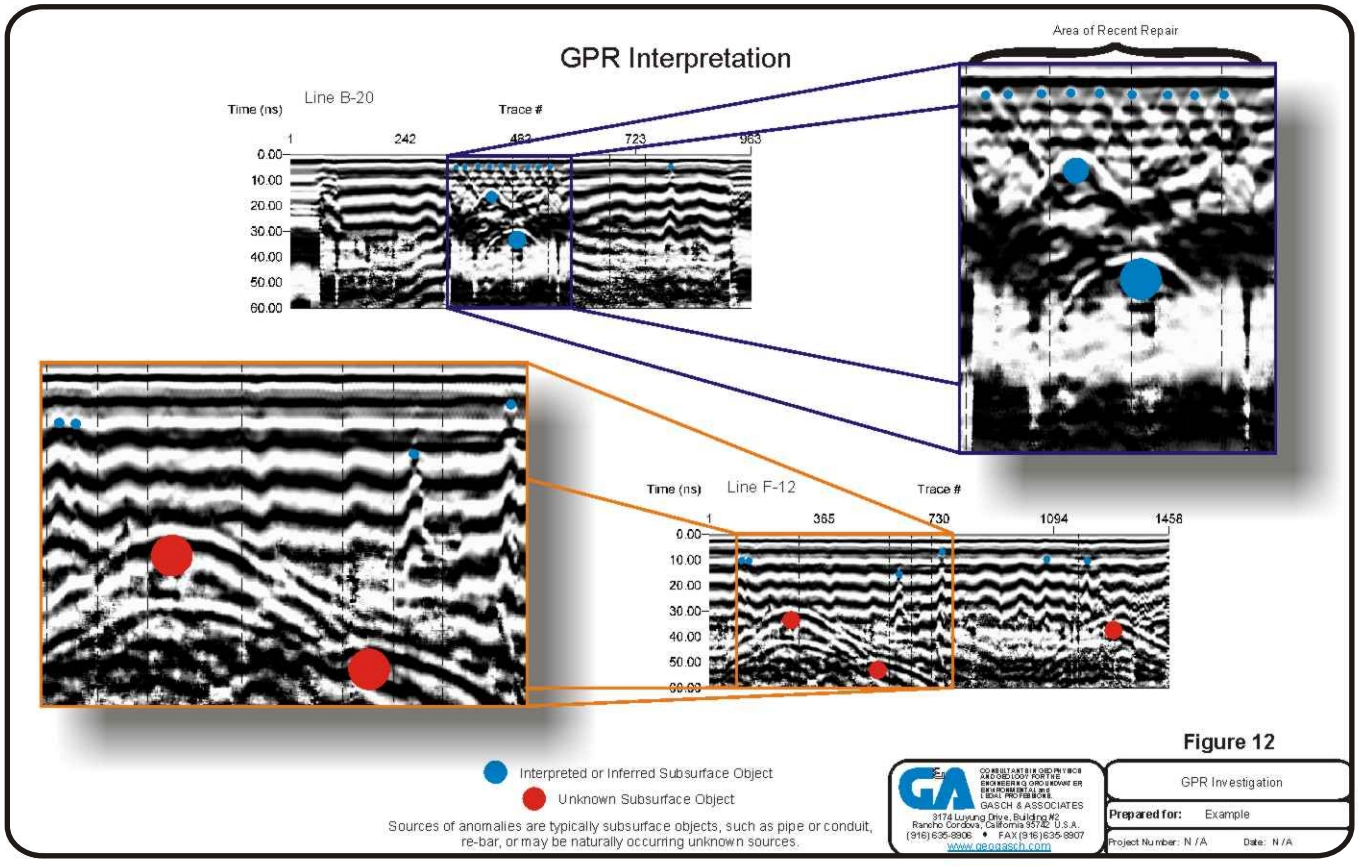


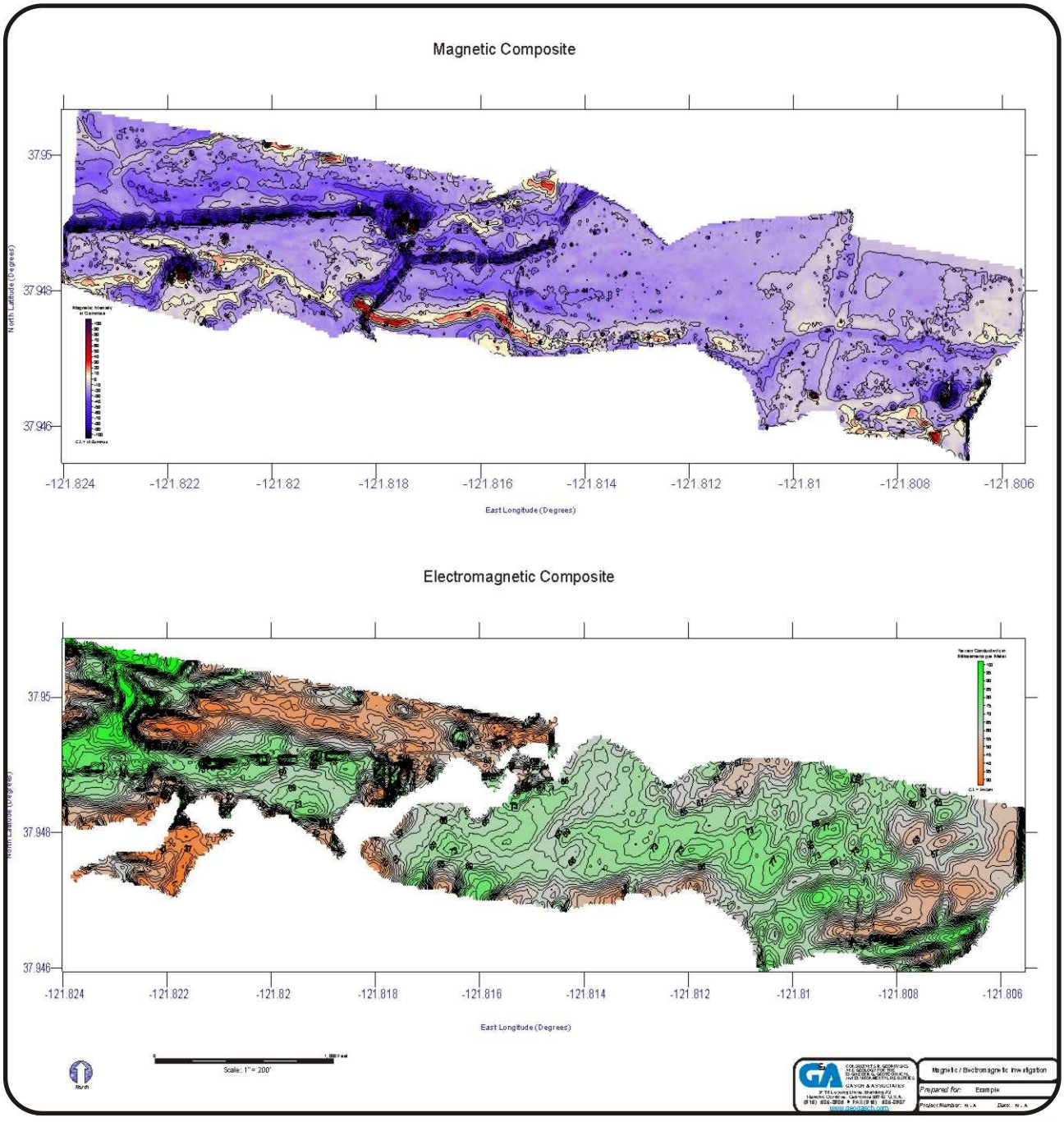

Figure 12

These examples are typical of the numerous subsurface features revealed by GPR investigation. Features such as subsurface piping, the apparent position of electrical conduit, the foundations of light posts and other structures can be identified. Areas which were recently repaired are clearly evident, and indicate piping and re-bar. In the lower example, deeper anomalies were detected which had no known source.

# Magnetics & Electromagnetics

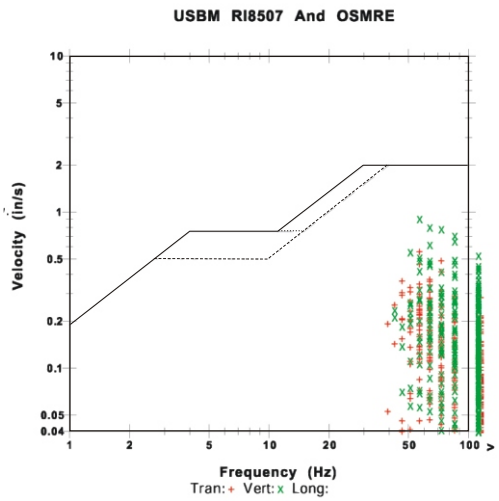
Gasch & Associates
Engineering Geophysics

Evidence of historic mining prompted the magnetic and electromagnetic investigation of this swath of land that measures approximately 1000 feet in width by 1 mile (5280 feet) in length. The magnetic and electromagnetic surveys were designed to detect features such as mine air-shafts or mine-dewatering shafts. Used in combination, these methods can detect both ferromagnetic and conductive non-ferromagnetic debris that may be associated with the historic mine workings. Such variations are also caused by changes in geology, soil and rock type, moisture content, as well as metallic debris buried within or upon the soil.



# Vibration & Noise Monitoring

Gasch & Associates
Engineering Geophysics

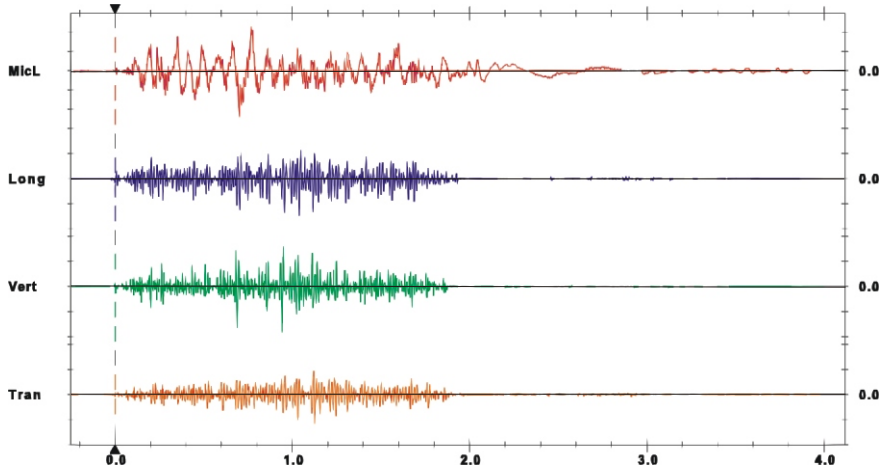



Vibration and noise monitoring can be critical when blasting must be employed near sensitive homes or structures.

G&A can provide third-party, non-biased, legal documentation of vibration and noise levels such as peak particle velocity, frequency, linear decibels.

| | Tran | Vert | Long | |
|---|---|---|---|---|
| PPV | 0.568 | 0.913 | 0.731 | in/s |
| ZC Freq | 57 | 57 | 64 | Hz |
| Time (Rel. to Trig) | 1.127 | 0.942 | 1.039 | sec |
| Peak Acceleration | 0.713 | 1.05 | 0.785 | g |
| Peak Displaceme | 0.00146 | 0.00227 | 0.00173 | in |
| Sensorcheck | Passed | Passed | Passed | |

Peak Vector Su 0.958 in/s at 0.688 sec




G&A also provides pre- and post-blast observation reports, including video documentation, often required by city, county or state regulations.

# Sample Projects

Gasch & Associates
Engineering Geophysics

| Project Title | Client | Project Description |
|---|---|---|
| Location of Lost Horizontal / Directional Borings | Flour Global Services | Magnetic / Electromagnetic / Seismic Methods to detect lost Horizontal / Directional Borings. |
| Morro Bay Geophysical Investigation | MCI / WorldCom | Seismic Refraction / Electrical Resistivity to Investigate Local Faulting / Geology |
| Raw Water Pipeline Excavatability Investigation | Stevens, Ferrone & Bailey Engineering, Inc. | Refraction seismic survey to determine rock excavation aspects. |
| Tate Residence Geophysics | Fletcher & Hardoin Architects | Electrical resistivity and refraction seismic to determine landslide thickness. |
| Southpointe Development Rippability Seismic | Kiewit Pacific Co. | Refraction seismic survey to determine rock excavation parameters. |
| Pleasant Grove School | Elk Grove Unified School District | Underground storage tank investigation. |
| Briggs Park Rippability Seismic Study, Folsom, Ca. | Youngdahl Consulting Group | Refraction seismic study to determine rock excavation aspects. |
| Development Geo-Hazards Study, Carmel, Ca. | Peter Pan Investments | Geologic hazards evaluation for custom home sites. |
| City of Lincoln Groundwater Geophysics & Geology | City of Lincoln | Reflection seismic for defining the groundwater aquifer system for the City of Lincoln sub-basin. |
| Electrical Resistivity Water Well Location | Shenandoah Valley Vineyards | Electrical resistivity to determine optimum water well drilling location. |
| San Luis & Delta-Mendota Canal Leakage Investigation. | San Luis & Delta - Mendota Water Authority | 2-D and 3-D electrical resistivity to locate leakage points along the cement lined canal. |
| U.C. Davis Recreation Swimming Pool Complex | Aquatic Pool Design Group | GPR Investigation to locate potential voids beneath the concrete pool deck. |
| Yosemite Park Refraction Seismic Investigation | URS Group, Inc. | Refraction seismic investigation to determine rock characteristics for horizontal boring for replacement waste-water pipeline. |
| Hat Creek Observatory Geophysics | Sanders & Associates Geostructural Engineering, Inc. | Geophysical methods to determine rock characteristics for SETI radio wave telescope array. |
| Three-Dimensional Modeling of Seismic Refraction Data at the Shingle Springs Casino Site | Lakes Gaming, Inc. | Creation of a solid 3-D model for visualization of rock excavatibility characteristics and planning of construction strategy. |
| C.A. Rasmussen, Inc. vs. Nevada Dept. of Transportation (NDOT). | C. A. Rasmussen, Inc. | Expert Testimony on applied engineering geology and geophysics at the highway widening project in Clark County, Nevada. |
| Carneros Estates Pre-Development and Engineering Geophysics | Pete Herrlich Realty | Refraction seismic and electrical resistivity to confirm/dispute published fault trace location and foundation design geophysics. |
| Shear wave study for a multi-story building at the Univ. of California at Davis Campus. | Wallace - Kuhl & Associates | Measurement of surface and borehole shear wave velocities to determine earthquake acceleration parameters. |
| Groundwater Contaminant Plume Delineatation | Cahto Indian Tribe / US Bureau of Indian Affairs | Electrical resistivity to locate groundwater migration paths and contaminant plume delineation at a recently closed landfill. |
| Recon Metals Geophysics | Recon Metals | Definition of contamination plumes. |

# Sample Projects

Gasch & Associates
Engineering Geophysics

| Project Title | Client | Project Description |
|---|---|---|
| Cool Quarry Vibration Monitoring | Teichert Aggregates | Production blast vibration monitoring. |
| Fandango Restaurant Geophysics | Grice Engineering | Rock strength evaluation for structure expansion. |
| Ferrari Ranch Mine Location Geophysics | Kleinfelder / Del Webb California Corporation | Geophysical methods to locate underground mine workings, drilling confirmed results. |
| Irrigation Water Canal Geophysics | Turlock Irrigation District | GPR to determine location and extent of canal fill subsidence. |
| Bickford Ranch Residential Development Geophysics | US Home Corporation | Geophysics and engineering geology for groundwater evaluation, excavatability, geologic hazards and geo-politics. |
| Freemont Peak Transmission Tower Geophysics | Hearst-Argyle | Rock strength for proposed transmission tower. |
| Engineering Geology for a 1 Million Gallon Water Tank | Placer County Water Agency | Engineering geology to determine the rock strength for a 1 million gallon water tank pad. |
| Greenleaf Power Plant #2, Resistivity Survey | Bechtel Power Corporation | Electrical resistivity determination of grounding grid parameters for power plant. |
| Eastern Regional Landfill Environmental and Groundwater Study, Truckee, California | Applied Engineering & Geology | Delineation of potential contaminant migration routes. Generated 3D model of sub-surface migration paths. |
| Groundwater Evaluation for the City of Lincoln's Sphere of Influence | Del Webb/Placer Holdings, Inc. / Sterling Pacific Assets and the City of Lincoln, California | Geology and Geophysics to evaluate the groundwater potential for future development. |
| Miners Ravine Flood Retention Dam Geophysics | GEI Consultants | Engineering geophysics for rock strength at proposed dam site. |
| ARGET River Crossing Geophysics | Spink Corporation / Gencorp | Reflection seismic for horizontal bore under the American River for pipeline. |
| IRCTS Groundwater Geophysics | ENSR Consulting | Seismic Reflection for Groundwater Channels at the Inactive Rancho Cordova Test Site (IRCTS). |
| Proposed Sun City Georgetown, Texas Geophysics | Del Webb | Regional / Localized Geophysical Cave Search in Karst Terrain. |
| Camino Penstock Engineering Geophysics | Sacramento Municipal Utility District (SMUD) | Seismic Investigation to Determine Rock Strength for Rock Bolt Anchorage of existing Penstock. |
| Debris Dam Site Geophysics | Vector Engineering / Newmont Mining Co. | Refraction seismic for dam site and leach pad location, Cajamaca, Peru, SA. |
| Burleigh-Murray Ranch | State of California | Groundwater geophysics. |
| San Bernardino Retention Dam | U.S. Dept. of the Navy | Geophysical exploration. |
| Cellular Tower, Phoenix, AZ Geophysics | Metro Mobile | Foundation engineering geophysics. |
| Beaumont Test Site Geophysics | Lockheed Corp. | Multiple geophysical methods for plume evaluation. |
| Monte Creek Landslide Study | U.S. Forest Service | Geophysical exploration of landslides. |

# Resume: Jerrie W. Gasch

Gasch & Associates
Engineering Geophysics

EDUCATIONAL and PROFESSIONAL BACKGROUND

Bachelor of Science in Geology from University of Wisconsin at Madison, Wisconsin.
Graduate Studies at the Geophysical and Polar Research Center at the Madison, Wisconsin and the Instute of Geophysics, Honolulu, Hawaii.

California Registered Geologist # 1203
California Registered Geophysicist #516
California Certified Engineering Geologist #450

ORGANIZATIONS

| | |
|---|---|
| 1965 to present | American Association of Petroleum Geologists |
| 1965 to present | Society of Exploration Geophysicists |
| 1973 to present | Association of Engineering Geologists |

PROFESSIONAL EXPERIENCE

| | |
|---|---|
| July, 1999 to present | Gasch & Associates, Sacramento, California. President, Under his management, Gasch & Associates has performed over 3000 geological and geophysical investigations throughout the continental United States, Alaska, and Central and South America. Mr. Gasch has managed such diverse projects as large earth fill dams, seismic risk analysis, high resolution, 2-D and 3-D, “P” and “shear” wave reflection/refraction seismic surveys, marine sub-bottom profiling, electrical resistivity surveys, electromagnetic surveys and magnetic surveys, ground penetrating radar, vibration and blast monitoring. |
| Sept. 1997 to June 1999 | Spectrum-Gasch Geophysics, Sacramento, California. Chief Geophysicist, Geologist, and Engineering Geologist. |
| Jan. 1970 to Aug. 1997 | Gasch & Associates, Sacramento, California. President. |
| Dec. 1967 to Dec. 1969 | California Division of Mines and Geology, Sacramento, California. Geophysicist and Geologist. |
| Nov. 1963 to Nov. 1967 | California Department of Water Resources, Los Angeles and Sacramento, California. Engineering Geologist and Geologist. |

# Resume: Kent L. Gasch

Gasch & Associates
Engineering Geophysics

EDUCATIONAL and PROFESSIONAL BACKGROUND

128 Semester units majoring in geology and physics at California State University, Chico.

ORGANIZATIONS

Environmental and Engineering Geophysical Society
American Association Petroleum Geologists
Association of Engineering Geologists
Society of Exploration Geophysicists
California Builders Exchange
National Ground Water Association
International Society of Explosive Engineers

PROFESSIONAL EXPERIENCE

January, 1998 to present

Gasch & Associates, Sacramento, California. Vice-President. Mr. Gasch has managed field crews for acquisition of seismic reflection and refraction data, 2D and 3D Resistivity data, ground penetrating radar, ground magnetics, vibration and blast monitoring. Additional responsibilities include processing, interpreting and drafting of all types of geophysical data and compilation and writing of reports of findings.

June, 1984 to January, 1998

Gasch & Associates, Sacramento, California. Worked as a geophysical and geological field and office technician in the United States, Alaska and Peru, S.A.

# Resume: David T. Hagin

Gasch & Associates
Engineering Geophysics

## EDUCATIONAL and PROFESSIONAL BACKGROUND

Bachelor of Science in Geophysics; University of California, Riverside,
Post Graduate Studies in Geophysics; Three years, University of California, Riverside.

California Registered Geophysicist No. 1033
California Professional Geologist No. 7896

## ORGANIZATIONS

Society of Exploration Geophysicists
Environmental and Engineering Geophysical Society
Association of Engineering Geologists

## PROFESSIONAL EXPERIENCE

| | |
|---|---|
| January, 1999 to present | Gasch & Associates, Sacramento, California - Project Manager. Mr. Hagin has managed field crews for acquisition of 2D and 3D Resistivity data, seismic reflection and refraction data, ground magnetics, ground penetrating radar, vibration and blast monitoring. Additional responsibilities include processing and drafting of all types of geophysical data and compilation and writing of reports. |
| September, 1992 to January, 1999 | David Hagin Tutoring, Chico, California - Owner. Provided mathematics and physics tutoring to over 150 college students at various levels and across all disciplines. |
| August, 1989 to August , 1992 | Leighton & Associates, Riverside, California Engineering Geologist. Performed all aspects of fieldwork, lab work, research and report writing. |

# Resume: John W. Busby

Gasch & Associates
Engineering Geophysics

## EDUCATIONAL and PROFESSIONAL BACKGROUND

Bachelor of Science in Geology; Regents College, New York.

California Professional Geologist No. 7306
California Registered Geophysicist No. 1045
California Certified Engineering Geologist No. 2373

## ORGANIZATIONS

Association of Engineering Geologists
American Association of Petroleum Geologists

## PROFESSIONAL EXPERIENCE

December 2000 to present

Gasch & Associates, Sacramento California
Project Manager. Mr. Busby has managed field surveys for the acquisition of 2D Resistivity , IP, electromagnetic, and ground magnetic data. Additional responsibilities include processing, drafting, compiling information, and writing geological and geophysical reports.

June 1998 to December 2000

Condor Earth Technologies, Sonora, California.
Staff Geologist and Senior Technician. Participated in Materials testing, Geotechnical and Geophysical Investigations for bridges, roads, homes, commercial sites, schools, hospitals and other public & private contract projects.

May 1984 to May 1998

Reynolds, Busby & Associates, Murphys, California.
Partner. Consulting Geophysical Prospector, Environmental Technician and Petroleum Geologist. Managed domestic and international geophysical, environmental, and petroleum exploration projects.

March 1976 to May 1984

Phoenix Geophysics, Inc., Denver, Colorado.
Geophysical Field Crew Supervisor.

# Certificate of Insurance

Gasch & Associates
Engineering Geophysics

## ACORD CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 06/16/2005

PRODUCER (916)485-8000 FAX (916)485-1007
Chartwell Surety & Insurance Agency
CA Lic #0768459, NV Lic #27394
3301 Watt Avenue, Suite 300
Sacramento, CA 95821

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

INSURED Gasch & Associates
3174 Luyung Drive,
Building #2
Rancho Cordova, CA 95742-6576

| INSURERS AFFORDING COVERAGE | NAIC # |
|---|---|
| INSURER A: Maryland Casualty Company | |
| INSURER B: Hartford Insurance Group | |
| INSURER C: | |
| INSURER D: | |
| INSURER E: | |

COVERAGES

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

| INSR LTR | ADD'L INSRD | TYPE OF INSURANCE | POLICY NUMBER | POLICY EFFECTIVE DATE (MM/DD/YY) | POLICY EXPIRATION DATE (MM/DD/YY) | LIMITS | |
|---|---|---|---|---|---|---|---|
| A | | GENERAL LIABILITY<br>X COMMERCIAL GENERAL LIABILITY<br>CLAIMS MADE X OCCUR<br>GEN'L AGGREGATE LIMIT APPLIES PER:<br>POLICY PRO-JECT LOC | PAS 00025843 | 08/15/2004 | 08/15/2005 | EACH OCCURRENCE<br>DAMAGE TO RENTED PREMISES (Ea occurence)<br>MED EXP (Any one person)<br>PERSONAL & ADV INJURY<br>GENERAL AGGREGATE<br>PRODUCTS - COMP/OP AGG | $ 1,000,000<br>$ 1,000,000<br>$ 10,000<br>$ 1,000,000<br>$ 2,000,000<br>$ 2,000,000 |
| B | | AUTOMOBILE LIABILITY<br>X ANY AUTO<br>ALL OWNED AUTOS<br>SCHEDULED AUTOS<br>X HIRED AUTOS<br>X NON-OWNED AUTOS | 57UECTQ0857 DX | 12/01/2004 | 12/01/2005 | COMBINED SINGLE LIMIT (Ea accident)<br>BODILY INJURY (Per person)<br>BODILY INJURY (Per accident)<br>PROPERTY DAMAGE (Per accident) | $ 1,000,000<br>$<br>$<br>$ |
| | | GARAGE LIABILITY<br>ANY AUTO | | | | AUTO ONLY - EA ACCIDENT<br>OTHER THAN AUTO ONLY: EA ACC<br>AGG | $<br>$<br>$ |
| | | EXCESS/UMBRELLA LIABILITY<br>OCCUR CLAIMS MADE<br>DEDUCTIBLE<br>RETENTION $ | | | | EACH OCCURRENCE<br>AGGREGATE | $<br>$ |
| | | WORKERS COMPENSATION AND EMPLOYERS' LIABILITY<br>ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED?<br>If yes, describe under SPECIAL PROVISIONS below | | | | WC STATU-TORY LIMITS OTH-ER<br>E.L. EACH ACCIDENT<br>E.L. DISEASE - EA EMPLOYEE<br>E.L. DISEASE - POLICY LIMIT | <br>$<br>$<br>$ |
| | | OTHER | | | | | |

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES / EXCLUSIONS ADDED BY ENDORSEMENT / SPECIAL PROVISIONS

Evidence of Coverage
Additional Insured as per form attached.

10 DAY NOTICE OF CANCELLATION APPLIES FOR NON-PAYMENT OF PREMIUM

CERTIFICATE HOLDER

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO MAIL SUCH NOTICE SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE John Bolen