Community Contingency Plan
for the Remediation of the Blake Court
And Black Material Areas
Former Solano County Sanitary Landfill
Benicia, California

June 29, 2001

prepared by
Northgate Environmental Management, Inc.
on behalf of
Granite Management Corporation

northgate
environmental
management, inc.

June 29, 2001

Darrell Nations, P.E., Project Manager
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Subject: Community Contingency Plan for the Remediation of the Blake Court and Black Material Areas, Former Solano County Sanitary Landfill, Benicia, California

Dear Mr. Nations:

Enclosed are three copies of the Community Contingency Plan for the remediation of the Blake Court and Black Material Areas, Former Solano County Sanitary Landfill. Northgate Environmental Management, Inc. (Northgate) has prepared this document on behalf of Granite Management Corporation. The intent of this plan is to provide procedures to protect the health and safety of the community while implementing the Remedial Action Plan for the Site. This plan addresses the Department of Toxic Substances Control's comments on the draft report, which were submitted to Ted Splitter of Northgate on May 30, 2001.

If there are any questions concerning this plan, please contact the Project Coordinator, Mr. Ted Splitter, at (415) 492 0310.

Sincerely,

Alan L. Leavitt, P.E.
Principal Engineer

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ACRONYMS AND ABBREVIATIONS

AQE	Air Quality Engineers
ARC	American Red Cross
BAAQMD	Bay Area Air Quality Management District
bgs	below ground surface
Cal/EPA	California Environmental Protection Agency
Cal/OSHA	California Occupational Safety and Health Administration
CCP	Community Contingency Plan
CCR	California Code of Regulations
CFR	Code of Federal Regulations
City	City of Benicia
CIWMB	California Integrated Waste Management Board
cy	cubic yards
DECON	DECON Environmental Services, Inc.
DTSC	Department of Toxic Substances Control
ERPG	emergency response planning guidelines
GISO	General Industry Safety Orders
Granite	Granite Management Corporation
H_2S	hydrogen sulfide
HCN	hydrogen cyanide
HSC	California Health and Safety Code
HSP	Health and Safety Plan
IDLH	immediately dangerous to life and health
K	Kelvin
LEL	lower explosive limit
LFR	Levine-Fricke-Recon
m	meter
mg/m^3	milligrams per cubic meter
NCOU	North Canyon Operable Unit
NGVD	national geodetic vertical datum
NIOSH	National Institute for Occupational Safety and Health

Northgate	Northgate Environmental Management
OEHHA	Office of Environmental Health Hazard Assessment
OSHA	Occupational Safety and Health Administration
PEL	permissible exposure limit
PPE	personal protective equipment
ppm	parts per million
REL	recommended exposure limit
RWQCB	Regional Water Quality Control Board
SCDEM	Solano County Department of Environmental Management
SEMS	Standardized Emergency Management System
SOES	State Office of Emergency Services
SSO	Site Safety Officer
STEL	short-term exposure limit
UCL	upper confidence limit of the mean
U.S. EPA	United States Environmental Protection Agency
VOC	volatile organic compound

1.0 INTRODUCTION

This Community Contingency Plan (CCP) was prepared by Northgate Environmental Management (Northgate) on behalf of Granite Management Corporation (Granite) for the remediation of Blake Court and Black Material areas, Former Solano County Sanitary Landfill (the Site). The CCP describes emergency planning and response procedures to be implemented in the unlikely event of unplanned chemical releases or spills while implementing the Remedial Action Plan for the site. This CCP has been developed to identify the necessary resources and to outline personnel duties for efficient implementation of emergency recognition, response, and procedures.

This CCP will be used in conjunction with the health and safety plan (HSP) during field work to protect the community and on-site workers from potential acute health risks while the Site is being remediated. The CCP will be updated, as appropriate, to address changed conditions (e.g. changes in the responsible personnel and/or agency contacts, significant changes in the type and duration of field activities, etc.). Revisions to the CCP will be submitted as addenda to this document.

This CCP is intended for use by Granite and its representatives and contractors, by the Department of Toxic Substances Control (DTSC) and its representatives and contractors, and by the City of Benicia and its Police and Fire Departments.

1.1 Physical Setting

The work area is located in the vicinity of Blake Court, Benicia, California (Figure 1 and Figure 2). Historically, a sanitary landfill (the former Solano County Sanitary Landfill, also known as Braito Landfill) operated in a portion of the area allocated for waste management by Solano County.

The regional terrain in the vicinity consists of valleys with gently to moderately sloping hills that extend locally to an elevation of approximately 600 feet national geodetic vertical datum (NGVD). Ground-surface elevations in the work area generally range from about 185 feet NGVD, adjacent to Rose Drive, to 240 feet NGVD in the soil stockpile area. Predevelopment topographic contours and ground-surface elevation data were mapped by Greiner (formerly Bissell & Karn) of Fairfield, California (Greiner 1991). These data indicate that prefilling and predevelopment topography included two valleys in this area. A creek, formerly located in the larger of the two valleys, ran under what is now the location of a section of Rose Drive and sloped down to the south; a tributary ravine ran under what is now the location of a cul-de-sac called Blake Court and sloped down to the west.

The two valleys were generally graded by filling in the valleys with materials cut from the hilltops and hillsides. Level house pads were created perpendicular to the valleys' centerlines. Houses were subsequently constructed on the engineered fill except in

Blake Court, where houses were not constructed. In general, the valley sides slope down to the development area (i.e., the residential backyards). Sidewall V-ditches located near the toes of slopes drain surface-water runoff to storm-drain catch basins. In residential areas, surface-water runoff from irrigation and precipitation generally drains to curbside catch basins. The seven lots that encircle Blake Court have been graded at a 1 to 2% slope toward the street to prevent rainfall ponding on the soil cap above landfill material in this area, which is a permitted, closed landfill.

Surface-water flow is controlled by surface topography and man-made drainage structures (i.e., V-ditches, storm drains, curbs and gutters, and catch basins). Surface water either is intercepted by a drainage structure or infiltrates into soil. General surface-water runoff directions are shown on Figure 3.

The predominant wind direction in the area is from the west and south, with a mean wind speed ranging from 7 to 15 miles per hour (see Figure 3).

1.2 Description of Planned Work

Based on the findings and recommendations of the Feasibility Study/Public Health Evaluation of Remedial Alternatives, dated April 18, 1997 (LFR 1997) and the Remedial Action Plan, dated June 25, 2001 (Northgate 2001) Site cleanup actions are planned for the vicinity of Blake Court. The work area is depicted on Figure 2. The following sections describe the planned work and the chemicals of interest.

1.2.1 Black Material Area

The Black Material is present below ground surface (bgs) under portions of Lots 47, 49, 50, and 51, and portions of Parcel C-1; (Figure 4). Planned work includes treatment and removal of the Black Material, and in some areas, the overlying Blake Court Refuse, and fill with fragments of refuse. In place treatment processes will be used to reduce gaseous components and solidify the more fluid portions of the Black Material and to stabilize the material for excavation and disposal purposes. Specific components of this work will include the following:

- Short-term soil gas extraction and treatment before in place stabilization to reduce potential emissions during in place soil mixing.
- Removal of unoccupied houses on Lots 50 and 51.
- Excavation and temporary stockpiling of clean overburden soils.
- Excavation and offsite disposal of Blake Court Refuse and fill with fragments. The refuse will be loaded with an excavator or front-end loader into trucks for removal from the work area
- Addition of stabilization agents as a slurry to the Black Material using a mixing auger(s).

- Collection and treatment of potential air emissions generated during soil mixing, using activated carbon. Air may be further treated using a thermal oxidation unit or other technologies, as necessary.
- Excavation of stabilized Black Material (after curing) using conventional earth-moving equipment (e.g., excavators, loaders, etc.) and loading into trucks for transport from the work area. Appropriate dust and odor control measures will be implemented as specified in the HSP and design documents. These measures include keeping work areas moist with water and/or use of odor suppressing foams. An additional measure could include excavation under a temporary structure, if necessary, to control potential odors and soil-gas emissions. Temporary sheet piling will be installed locally to stabilize the excavation area.
- Disposal of stabilized Black Material at an appropriate permitted facility, based on the characteristics of the treated material.
- Collection and analysis of confirmation samples from the excavation, then backfilling the excavation with stockpiled, clean overburden soils and imported fill, if necessary, to establish the final grade. The houses and landscaping on Lots 50 and 51 will be restored after completion of remedial work.

1.2.2 Blake Court and Portions of Parcel C-1

The work area includes all of Blake Court and portions of Parcel C-1. The work area portion of Parcel C-1 includes the area where fill with fragments of refuse is located, and the area where overburden soils will be stockpiled, as shown on Figure 4. No houses exist on Blake Court or Parcel C-1.

The planned work includes the removal of fill with fragments of refuse and Blake Court Refuse from all of Blake Court and Parcel C-1. Specific components of this work include the following:

- Excavation of overburden and landfill material from the Blake Court Area. The maximum excavation depth will be approximately 40 ft bgs. The excavation will be sloped or benched, as necessary, to meet OSHA requirements and to protect workers during excavation.
- Excavation and off-site disposal of Blake Court Refuse and fill containing fragments of refuse from Parcel C-1. The maximum excavation depth in Parcel C-1 will be approximately 15 ft bgs. The excavation will be sloped or benched, as necessary, to meet OSHA requirements and to protect workers during excavation.
- Loading of the excavated material into trucks for transport from the Site. The disposal site will be selected based on characterization of the excavated material, landfill acceptance criteria, and contractor bids for transportation and disposal.

- Confirmation sampling and analysis, then backfilling of the excavation area with clean overburden soil and imported fill. After backfilling, the Blake Court Area, including a portion of Parcel C-1, will be regraded to establish the planned final elevation. The stockpiled overburden soil will be tested prior to backfilling the excavation area.

1.2.3 Dust and Odor Control Measures

For this project, dust and odor control will be implemented to reduce potential generation of airborne particles and odors during in place stabilization and earthmoving operations. A water truck will be used to wet down surfaces as necessary to control dust. The spray nozzles can be adjusted to water the material from several different positions (i.e., from one side or full rear spray). A spray hose will also be maintained to manually spray areas where access by truck-mounted nozzles is difficult, and to spray material as it is loaded into trucks. The spraying technique will consist of providing a medium-fine spray over the material without over watering and causing runoff. The material will be kept moist by spraying water on an as-needed basis. In the event that water spraying is inadequate to maintain dust control, dust palliatives or other methods of dust control may be used.

All overburden soil maintained at stockpile areas will be covered and kept moist, to reduce the potential for fugitive dust generation and to assist in maintaining moisture for later compaction.

Foam suppressants will be used as necessary to control odors while stabilizing, excavating and loading the stabilized Black Material. The use of such foams is expected to adequately control the emission of ammonia and other odorous gases, if present. However, in the unlikely event that foam suppressants do not adequately control odors during excavating and loading, then the excavation and loading area would be tented with a portable structure to further contain emissions. With this contingency, the stabilized Black Material would be excavated and loaded under cover. The structure would be equipped with sliding or roll-up doors to control air flow when vehicles are not entering or leaving the structure. Air would be circulated through the portable structure and treated with activated carbon and other emission controls, as necessary, before discharge.

Air monitoring devices will be maintained in the work zone and surrounding area to monitor air quality for comparison to the established action levels. Further details of the air monitoring program are provided in Section 5.2.

1.2.4 Transportation and Disposal

Details regarding transportation of excavated materials are presented in the "Transportation Plan for the Former Solano County Sanitary Landfill", dated June 29,

2001 (Northgate, 2001). A brief discussion of the transport and disposal process is presented in this section.

The trucks used for hauling the excavated materials to the off-site disposal facility will be decontaminated before leaving the work area. This decontamination may consist of washing the tires, flaps, and lower areas of any residual dust or soil material picked up during the loading operation. Water for decontamination will be obtained from a local fire hydrant, as approved by the City. All decontamination water will be collected and appropriately managed at the Site.

The trucks hauling excavated material to the off-site disposal facility will be covered at all times. Haul routes within Benicia will be restricted to Blake Court, Rose Drive, Columbus Parkway, and Interstate 780. City streets used as haul routes within Benicia will be wet-swept with a vacuum sweeper, as appropriate, to keep the roads clean.

1.2.5 Restoration Activities

1.2.5.1 Backfill and Compaction of Excavations

The excavations will be backfilled as the confirmation sampling results become available and show that the Black Material and the Blake Court Refuse and fill with fragments of refuse have been removed. Initial backfill will consist of the stockpiled clean overburden material. Additional clean soil may be excavated from the proposed Borrow Site or may be imported, as necessary, to establish the final grades.

1.2.5.2 Reconstruct Drainage and Landscaping

Following restoration of the grades on Parcel C-1 and Lot 51, the portion of the concrete V-ditch that was removed during the grading activities will be replaced. In addition, the catch basin and storm-drain pipe on Lot 51 will be restored.

After completing the remedial work, the Blake Court road and the houses on Lots 50 and 51 will be reconstructed. New landscaping will be installed on Lots 48, 49, 50, and 51, as necessary. Other areas will be revegetated by hydroseeding.

1.3 Security and Control

To provide safety to workers and the surrounding community, a 6-foot-high chain-link fence will be placed around the work areas and barriers and flagging tape will be used to delineate the exclusion zone. Additional procedures to maintain security in the area and limit access are described below. Security will be provided during non-working hours, including nights and weekends.

1.3.1 Security

To protect persons from exposure to physical hazards, any excavations left open and unattended in the area will be appropriately barricaded and posted with visible "Construction Zone – Authorized Personnel Only" signs, warning flags, or other appropriate signs. Heavy machinery and equipment will be stored in a secured area upon completion of each day's work. Soil or water that may contain Black Material, Blake Court Refuse, or fill with fragments of refuse will be secured within the fenced area to prevent accidental contact or unauthorized tampering.

1.3.2 Access

The entire area within the fenced work area boundaries will be designated as an exclusion zone. Access to the exclusion zone will be limited to authorized personnel and visitors with the appropriate health and safety training, and wearing appropriate personal protective equipment (PPE). Authorized personnel will include:

- Northgate employees
- designated Granite representatives
- governmental personnel
- designated subcontractors

The Site Safety Officer (SSO) will monitor the exclusion zone to verify that personnel do not enter without proper PPE. Permission to enter the exclusion zone must be obtained from the SSO or the State's on-site representative. All visitors' names will be recorded in the SSO's field notes, with their reasons for visiting.

2.0 CONTINGENCY EVENTS

2.1 Conditions Requiring Contingency Procedures

The purpose of this CCP is to protect the community from potential acute risks from exposure to unplanned releases, and to establish emergency response procedures in the event of a chemical release, fire and/or explosion, and natural disaster.

CCP procedures will be initiated should any of the following unlikely situations, referred to as contingency events, develop:

- air emissions exceeding action levels
- fire, explosion, or any unplanned release of hazardous chemicals that may be an acute health hazard

- a natural disaster that may occur during the conduct of this work

2.2 Types of Alert Conditions

As directed by DTSC, there will be three types of alert conditions based on air monitoring at the nearest downwind residential receptor:

- Shutdown Alert
- Community Alert
- Community Relocation Alert

The SSO is responsible for initiating these actions.

A Shutdown Alert will be implemented if air concentrations exceed the Shutdown Alert action levels presented in Table 1, as measured by air monitors located at the work area's perimeter fence.

A Community Alert will be implemented if air concentrations exceed the Community Alert action levels presented in Table 1, or in the event of an on-site fire.

A Community Relocation Alert will be implemented if air concentrations exceed the Community Relocation Alert action levels presented in Table 1, or in the event of a natural disaster, uncontrolled fire, or explosion that may pose a significant threat to the community.

2.3 Communication with the Community

During contingency events, DTSC's Project Manager and the DTSC and Granite Public Relations contacts will be available to provide up-to-date information to the public (see Figure 5). In the event of a contingency event, Granite's and DTSC's Public Relations contacts will ensure that specified activities are announced through newspaper display, public notices, and/or radio public service announcements, if appropriate. Contingency notices, newspaper announcements, and other communications with the community will be released in standard English. A demographics evaluation performed by the City of Benicia indicates that communications in additional languages are not warranted.

In the event that Community Relocation is required, as described in Section 3.6.1, the Benicia Police Department, under the direction of the Police Chief/Incident Commander, is responsible for initial notification of the potentially affected community and will communicate with the community during the relocation.

3.0 CCP RESPONSIBILITIES AND NOTIFICATION

This section describes the general responsibilities of Granite, Northgate, DTSC, County, and City agencies. The CCP notification process is illustrated in Figure 5

3.1 Granite Management Corporation

Granite is responsible for implementing and updating, if necessary, the CCP during the proposed field activities. Any changes or revisions to the CCP must be approved by the DTSC. Granite will also be responsible for updating the information repository at the Benicia Public Library concurrent with notification of the community in the event of an incident. Updates will be sent by Granite to the library by facsimile.

3.2 Site Safety Officer (SSO)

The SSO or their designee shall be on site at all times during work hours. The SSO is responsible for directing all on-site activities related to health and safety, including air monitoring and response procedures. The SSO is responsible for communicating health and safety activities to the Project Coordinator and the DTSC's representative. If the Project Coordinator cannot be contacted, the Project Engineer will be notified as a backup contact.

The SSO will notify the appropriate City emergency response agency depending on the type of emergency (i.e., in case of fire or explosion the Benicia Fire Department; in the case of relocation, the Benicia Police Department).

The SSO is also responsible for notifying the City of Benicia representative and the Project Coordinator/Project Engineer should air monitoring indicate that a Shutdown Alert, Community Alert, or Community Relocation Alert action level (Table 1) is exceeded, or if a fire, explosion, hazardous material spill or natural disaster occurs. The Project Coordinator/Project Engineer will also notify Granite if a CCP event occurs.

3.3 Department of Toxic Substances Control

DTSC personnel will monitor adherence to the plan. The DTSC will also establish and maintain a community message log to document community comments and inquiries regarding project activities. This log will be made available to all persons requesting the information.

3.4 State Office of Emergency Services (SOES)

The State Office of Emergency Services (SOES) acts as a communication link between the local emergency response agency and the state agencies that may have emergency response resources (i.e., technical expertise or funding).

3.5. Solano County Department of Environmental Management

SCDEM will review this plan and any proposed actions, methods, or standards associated with this plan as they pertain to county ordinances related to the planned work. SCDEM will provide technical support to the DTSC and may provide field observation during installation of wells.

3.6 Bay Area Air Quality Management District

BAAQMD will review this plan and any proposed actions, methods or standards associated with this plan that may pertain to air quality and controlling air emissions. BAAQMD will provide technical support to the DTSC on air quality issues.

3.7 City of Benicia

In the event of an emergency, the City of Benicia Incident Commander has responsibility and authority over incident control and public safety. The SSO will notify the appropriate City emergency response agency depending on the type of emergency. In case of fire or explosion the Benicia Fire Department would act as the Incident Commander; and in the case of relocation, the Benicia Police Department would act as Incident Commander.

The Benicia Police and Fire Departments will be invited to meet with Project personnel at the Site to establish emergency coordination prior to the start of work.

3.7.1 Benicia Police Department

In the event of a Community Relocation Alert, the Benicia Police Department, under the direction of the Police Chief/Incident Commander, is responsible for initial notification of the potentially affected community and will communicate with the community during the relocation. The police department will assist the fire department, as needed, in any response actions.

Emergency response actions performed by the Benicia Police Department shall be in compliance with the Standardized Emergency Management System (SEMS), in accordance with Section 8607 of the California Government Code.

3.7.2 Benicia Fire Department

The Benicia Fire Department will provide any pre-hospital emergency medical care, fire fighting, and hazardous materials release response. The Benicia Fire Department Fire Chief would act as Incident Commander in the event of a fire, explosion, chemical spill, or other accident.

Emergency response actions performed by the Benicia Fire Department shall be in compliance with the SEMS, in accordance with Section 8607 of the California Government Code.

4.0 EMERGENCY PLANNING

Northgate personnel will complete the following activities before field work begins:

- Before initiating the work, Granite will send a pre-construction notice to residents of Lots 33 through 40, Lots 52, through 58, and Lots 74 through 90, the first five houses on Bolton Court, and the first five houses on Corcoran Court which are located within 500 feet of the work area perimeter. The notice will summarize the project scope and schedule and will list important telephone numbers and contacts.
- Granite representatives will visit residents nearest to the work area perimeter (at Lots 33, 38, 39, 40, 52, 53, 54, and Lots 78 through 85) to personally discuss the project and to answer questions.
- Notify the Benicia Fire Department, Benicia Police Department, medical treatment facilities, and other appropriate parties of scheduled field activities.
- Post signs in the area indicating emergency contact phone numbers.
- Prepare and complete a checklist of items to have in the work area (lists of on-site personnel and persons to be notified, hospital route maps, the CCP and applicable HSP and a relocation route map).
- Conduct training for on-site workers to discuss the scope of work, including CCP and health and safety procedures.

4.1 Medical Treatment Facilities

If medical attention is needed, on-site personnel and the public will be instructed to go to Sutter Solano Medical Center in Vallejo, California. This facility is located approximately 15 minutes from the work area and is open 24 hours per day. The "Route Map from Work Area to Sutter Solano Medical Center in Vallejo" (Figure 7) shows the route from the work area to the hospital and includes written directions.

Sutter Solano Medical Center
300 Hospital Drive

Vallejo, California
(707) 554-4444

Before field work commences, medical personnel at the Sutter Solano Medical Center will be informed of planned remediation activities and the work schedule, so potential emergency situations can be handled efficiently. At that time, the capability of these medical facilities will be reconfirmed. Granite will be responsible for notifying the DTSC as well as local response agencies, of any changes in facility capabilities, including if changing to a different facility is warranted.

4.2 Personal Protective and Emergency Equipment

The SSO will ensure that personnel in active work areas will have access to and will use appropriate PPE and emergency equipment, including:

- hard hats
- steel-toed/steel-shanked boots
- disposable nitrile index gloves (BEST brand)
- chemical resistant neoprene or nitrile outer boots
- safety glasses or goggles
- regular Tyvek coveralls
- hearing protection (when within 25 feet of excavation or heavy equipment)
- respiratory protection
- a minimum of one bullhorn
- a minimum of two 5-minute self-contained breathing apparatuses
- fire extinguishers

These supplies will be stored at the site in clearly labeled boxes or cabinets.

4.3 Training

On-site personnel shall have fulfilled all appropriate training requirements indicated by California Occupational Safety and Health Administration (Cal/OSHA) General Industry Safety Orders (GISO) 5192, including the training requirement and required refresher and supervisory courses, as appropriate.

Tailgate sessions to discuss this CCP and the HSP will be held for on-site workers and representatives of the Benicia Fire and Police Departments before field activities begin and periodically during implementation of the RAP. All Northgate, contractor,

subcontractor, agency, and visitor personnel shall receive, at a minimum, information about the following:

- the names of personnel and alternates responsible for work area health and safety
- health, safety, and other hazards at the work area
- instructions for using PPE
- action levels
- employee work practices for minimizing risks from on-site hazards
- instructions for safe use of engineering controls and equipment in the work area
- work area control measures
- emergency plans

4.4 Proposition 65 Warning

Under California's Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65), individuals who may be exposed to chemicals that may cause cancer or reproductive harm must be warned of such possible hazards pursuant to California Health and Safety Code (HSC) Section 25249.6 and Title 22 California Code of Regulations (CCR) Sections 12601(c)(3) (A) and 12601(c)(3) (B). A Proposition 65 notice will be posted which will read: "This area may contain chemicals known to the State of California to cause cancer and/or reproductive harm. This is a Proposition 65 notice." All individuals entering the exclusion zone will be asked to read the above posted notice. In addition, this warning is reiterated in the visitor's registration form presented in Section 10.3.

4.5 On-Site Communication during the Work and Emergency Responses

Radios or mobile telephones will be available for use during field activities to facilitate communications. Hand signals will be used where radios or telephones are impractical. Hand signals will be established and reviewed with workers before the beginning of field work. Also, a telephone will be installed in the unoccupied residence on Lot 48 for use during emergencies or in a field office.

In addition, a bullhorn will be readily available to use to alert residents nearest to the active work area of a Community Alert situation.

4.6 Accidents and Injuries

Appropriate measures will immediately be taken, in the event of a safety or health emergency within the work area. The SSO will be immediately notified and will respond according to the seriousness of the incident. Personnel trained in first aid will

be present during work activities to provide appropriate initial treatment of injuries or illnesses incurred during operations. The Northgate Project Coordinator will be immediately informed of any serious injuries or accidents. Additional parties will be notified in accordance with the process identified in Figure 5.

4.6.1 General Injury

On-site personnel (including contractors) are required to immediately notify the SSO, in the event of any work-related injuries.

If first aid would be sufficient (e.g., minor cuts and scrapes), the SSO will instruct personnel to use materials contained in the on-site first aid kit.

In the event of other injuries (e.g., suspected broken bones, concussion, breathing difficulties) the SSO will instruct personnel to simultaneously call emergency services (911) and apply interim first aid until paramedics arrive at the Site and assume first aid responsibilities.

4.6.2 Specific Treatments/Response

- Eye exposure: flush eye with eyewash; call emergency services (707) 745-3411
- Skin exposure: wash immediately with soap and water; call emergency services (707) 745-3411 if necessary
- Fire (localized): use fire extinguisher and activate alarm system; call emergency services (707) 745-3411
- Smoke inhalation: move to well-ventilated area; call emergency services (707) 745-3411
- Ingestion: call emergency services (707) 745-3411

4.7 Follow-Up

Following the completion of the emergency response measures, an evaluation will be performed by Granite and the appropriate agencies to assess the effectiveness of the emergency response measures and whether additional follow-up actions are needed. In the event of a chemical release above action levels, Granite will verify that the potential for additional exposure has been reduced to health protective levels.

5.0 CHEMICALS OF INTEREST AND AIR EMISSION ACTION LEVELS

5.1 Chemicals of Interest

This section describes the chemical substances that may be present during work activities, and for which air monitoring will be conducted, as described in Section 5.2. These chemicals are:

- ammonia
- hydrogen cyanide (HCN)
- hydrogen sulfide (H_2S)
- methane
- volatile organic compounds (VOCs)
- dust-borne lead,
- Portland cement
- lime
- fly ash

The chemical descriptions presented in Sections 5.1.1 through 5.1.6 are derived from the following toxicological references:

- 29 CFR 1910, Occupational Safety and Health Standards (OSHA)
- 29 CFR 1926, Safety and Health Regulations for Construction
- 8 CCR 5155, Cal/OSHA Air Contaminants, Permissible Exposure Limits
- Title 8 CCR, including GISO and Construction Safety Orders
- 8 CCR 5192, Occupational Health and Safety Standards
- Threshold Limit Values and Biological Exposure Indices for 2000 American Conference of Governmental Industrial Hygienists, Cincinnati, Ohio
- National Institute for Occupational Safety and Health (NIOSH) Pocket Guide to Chemical Hazards, U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control December 1996
- Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities: NIOSH; OSHA; U.S. Coast Guard; U.S. EPA. U.S. Government Printing Office, Washington, D.C. October 1985
- 1993 Update to Dangerous Properties of Materials, 8th edition, N. Irving Sax. New York: Van Nostrand Reinhold Company, Inc., 1992

- Standard Operating Safety Guides, U.S. EPA, Office of Emergency and Remedial Response, Hazardous Response Support Division, November 1984

Based on the concentrations of these compounds detected in the extensive soil, soil-gas, and ground-water sampling conducted to date, the likelihood that these chemicals are present at concentrations that will exceed air emission action levels is low. This CCP provides for safe practices to respond to the presence of these chemicals of interest, if they are detected above the air emission action levels presented in Table 1.

Sections 5.1.1 through 5.1.6 describe the color and odor characteristics of the chemicals of interest and compare the Community Alert and Community Relocation Alert air emission action levels (Table 1) to three national and state guidelines for air emissions: the Cal/OSHA permissible exposure limit (PEL); the NIOSH recommended exposure level (REL); and the NIOSH immediately dangerous to life and health (IDLH) level. These guidelines are primarily intended to protect workers from job-related chemical exposures. They are provided here to demonstrate (by comparison) the degree of safety that is built into the air emission action levels to be implemented during the work.

The air emission action levels to be used during the work are all below the most stringent of the Cal/OSHA PEL and the NIOSH REL guidelines. The Cal/OSHA PEL for a given chemical is a time-weighted average concentration that is not to be exceeded during any 8-hour work shift of a 40-hour work week. The NIOSH REL are also time-weighted average concentrations for up to a 10-hour work day during a 40-hour work week.

5.1.1 Ammonia

Ammonia is a colorless gas. Based on the results of soil treatability studies, ammonia may be released during Black Material stabilization and excavation activities. Ammonia has a slight pungent odor. The odor threshold value for ammonia is from 0.32 to 55 parts per million (ppm). The irritation threshold values for ammonia are from 55 to 140 ppm.

As shown in Table 1, the Community Alert and Community Relocation Alert action levels for ammonia are 5 ppm and 15 ppm, respectively. For comparison, the Cal/OSHA PEL for ammonia is 25 ppm, NIOSH REL is 25 ppm, and IDLH level is 500 ppm.

5.1.2 Hydrogen Cyanide

HCN is a colorless to pale blue liquid or gas with a bitter, almond-like odor. The odor threshold values for HCN are from 0.00027 to 5 ppm. As shown in Table 1, the Community Alert and Community Relocation Alert action levels for HCN are 1 ppm

and 2 ppm, respectively. For comparison, the Cal/OSHA PEL for HCN is 4.7 ppm (STEL), the NIOSH REL is 4.7 ppm (STEL), and the IDLH level is 50 ppm.

5.1.3 Hydrogen Sulfide

It is expected that in place soil stabilization of the Black Material before removal will raise the pH and cause H_2S in the Black Material to be converted into stable, nonvolatile, nonhazardous compounds.

H_2S is a colorless, flammable gas with an offensive odor similar to the odor of rotten eggs. The odor threshold values for H_2S are from 0.012 to 0.06 ppm. The irritation threshold values for H_2S are from 50 to 100 ppm.

As shown in Table 1, the Community Alert and Community Relocation Alert action levels for H_2S are 1 ppm and 5 ppm, respectively. For comparison, The Cal/OSHA PEL for H_2S is 10 ppm, the NIOSH REL is 10 ppm, and the IDLH level is 300 ppm.

5.1.4 Methane

Methane is a colorless, odorless, tasteless natural gas formed by the decay of organic materials. It may be found in the vicinity of swampy areas, landfills, sewage lines, and sewage treatment plants. Methane is non-toxic, but it can act as a simple asphyxiant by displacing or partially displacing oxygen. Methane can displace oxygen in a significant way only in a confined area, not in the open space. Since it is a nontoxic gas, there are no exposure limits for methane.

Methane is an explosion hazard when it is present in air at concentrations above the lower exposure limit (LEL), which is 5.0% by volume of air. As shown in Table 1, the Community Alert and Community Relocation Alert action levels for methane are 10% of the LEL (i.e., 0.5% volume of air) and 15% of the LEL (i.e., 0.75% volume of air), respectively.

5.1.5 Volatile Organic Compounds

To establish air emission levels for VOCs, soil-gas data were reviewed to identify the most significant VOC, with respect to risks to human health that has historically been detected. Toluene has been detected at concentrations that are three orders of magnitude higher than any other VOC detected in soil-gas samples, and so was selected as the most significant VOC, from a health perspective. Toluene is a colorless liquid with a sweet, pungent odor. The odor threshold values for toluene are from 0.17 to 40 ppm. The irritation threshold values for toluene are from 300 to 400 ppm.

As shown in Table 1, the Community Alert and Community Relocation Alert action levels for VOCs as toluene are 25 ppm and 50 ppm, respectively. For comparison, the

Cal/OSHA PEL for toluene is 100 ppm, the NIOSH REL is 100 ppm, and the IDLH level is 2000 ppm.

5.1.6 Dust-Borne Chemicals of Interest

Lead has been identified as a potentially dust-borne chemical of interest. This metal is described in the following section. The Community Alert air emission action level for total dust (Table 1) is 2.5 milligrams per cubic meter (mg/m^3). As explained in Table 1, there is no Community Relocation Alert level set. In the event that total dust concentrations related to remedial activities were to exceed 2.5 mg/m^3, residents near the work zone perimeter would be instructed to remain indoors until dust levels are reduced below the action level.

5.1.6.1 Lead

Inorganic lead is a generally ubiquitous element present in land, water, air, and food; hence, measurable amounts exist in all adult body tissues and fluids. Inorganic lead is a bluish-white, silver, or gray odorless solid.

The Cal/OSHA PEL for lead is 0.05 mg/m^3, the NIOSH REL is 0.1 mg/m^3 and the IDLH level is 700 mg/m^3. Soil sample analyses indicate that lead levels in dust at the work area would not be likely to exceed these guidelines.

Lead exposure may result in damage to the urinary, digestive, reproductive, and nervous systems. Exposure to lead may occur through inhalation or ingestion. Good personal hygiene must be strongly encouraged among site personnel.

5.2 Air Monitoring Procedures

5.2.1 Air Monitoring to Protect the Community

To protect the health and safety of the surrounding community, air monitoring will be conducted at a minimum of three locations: (1) upwind of the active work area; (2) downwind of the active work area at the perimeter fence; and, (3) at the property line of the nearest inhabited residence.

Air monitoring will be conducted throughout each active work day during soil gas treatment and curing, soil mixing, excavation, and loading activities. Air will be monitored for airborne dust and other chemicals as specified in the HSP. Monitoring data will be compared to the action levels described in Table 1. A weather station will be operated near the active work area to monitor wind speed and direction. Additional meteorological data (i.e., temperature, relative humidity, and barometric pressure) will also be collected and stored electronically. To establish initial monitoring

locations, meteorological data will be collected in work areas 24 hours before any soil intrusive work begins.

The SSO will be responsible for ensuring that the monitors are moved appropriately as the wind direction changes, and for checking that all monitors are in good working order. Instruments will be maintained and calibrated in accordance with applicable guidelines.

The air monitoring will be consistent with the following guidelines:

- "*Air/Superfund National Technical Guidance Study Series, Volume IV - Guidance for Ambient Air Monitoring at Superfund Sites (Revised)*", (EPA-451/R-93-007, May 1993;
- "*Guidance on Applying the Data Quality Objectives Process for Ambient Air Monitoring Around Superfund Sites (Stages I and II)*", (EPA-450/4-89-015), August 1989;
- "*Guidance on Applying the Data Quality Objectives Process for Ambient Air Monitoring Around Superfund Sites (Stage III)*", (EPA-450/4-90-005), March 1990;
- "*Contingency Plans at Superfund Sites Using Air Monitoring*", (EPA-4501-90-005), September 1990; and,
- "*Quality Assurance Handbook for Air Pollution Measurements, Volume IV - Meteorological Measurements*" (EPA-600/4-82-060), February 1983.

5.2.2 Soil-Gas Extraction and Treatment System Monitoring

In addition to the air monitoring program discussed in Section 5.2.1, the soil-gas extraction and treatment system will be monitored to verify that the treated soil gas meets applicable air discharge permit limits and does not cause action levels to be exceeded. During the initial soil-gas extraction period (before in place soil mixing), soil gas will be pumped from the ground to an above-ground treatment system via a series of extraction wells/piping. Influent soil-gas samples will be analyzed for hydrogen sulfide, ammonia, methane, and VOCs. This information will be used to control soil-gas flow rates and concentrations entering the treatment system.

During the in place soil mixing process, potential emissions from the soil treatment zone will be contained under a hood and placed under negative pressure. Soil gas entering the hood will be pumped to the soil-gas treatment system, where it will be monitored for the substances noted above. Ambient air in the vicinity of the hood will be monitored as described in the applicable HSP, to verify that the hood effectively contains potential soil-gas emissions.

The soil-gas treatment system will be monitored at various sampling points to verify proper operation of emission controls (e.g., carbon absorbers and thermal oxidation unit). The soil-gas treatment system will be equipped with an in-line sensor, alarm, and control switch to automatically shut off the unit if concentrations exceed pre-set values. The influent and effluent monitoring data will be routinely evaluated to control soil-gas extraction rates and to control the in place soil-mixing operation, as necessary. Additionally, the soil-gas treatment system monitoring data will be compared to ambient air monitoring data in the event that action levels are exceeded, to evaluate the possible source(s) of chemicals, which have been detected.

5.3 Analysis of Potential Air Emission Concentrations at Perimeter of Work Area

An evaluation was performed to assess potential air emission concentrations of chemicals of interest at the perimeter of the work area resulting from the maximum credible release scenario. The objective of the evaluation was to determine whether it would be necessary to establish Emergency Response Zones (areas of specific occupied residences) in the event that a phased community relocation needed to be implemented based on proximity to a chemical release along the work area perimeter resulting from excavation of unstabilized Black Material. Air emissions of organic and inorganic chemicals of interest were modeled separately and are described in detail in Appendix B.

5.3.1 Evaluation of Estimated Exposure Point Concentrations for Chemicals of Interest at Perimeter of Work Area

ChemRisk analysts used the U.S. EPA's air dispersion model, SCREEN, to estimate exposure point concentrations arising from untreated air vapor and dust emissions from the work area perimeter. The model considered the release of the following chemicals of interest:

- hydrogen cyanide (HCN)
- hydrogen sulfide (H_2S)
- toluene
- benzene
- bromomethane
- carbon tetrachloride
- chlorobenzene
- chloroform
- methyl chloride
- methylene chloride

- tetrachloroethene
- trichloroethene
- vinyl chloride
- cis-1,2-dichloroethene
- xylenes
- ammonia
- lead
- cadmium
- copper
- nickel
- dioxin

The conservative SCREEN model was run under an urban setting for a flat terrain, and for a full range of meteorological conditions. The estimated ground level concentrations for chemicals of interest were compared to ERPGs (AIHA 1996). ERPGs are 1-hour averaged toxicity guidelines, which are intended for use in emergency planning and response. ERPGs for a chemical are developed at three levels, ERPG-1, ERPG-2, and ERPG-3, with ERPG-1 being the most health protective. ERPGs are defined as follows:

ERPG-1 is the maximum airborne concentration below which nearly all individuals could be exposed for up to 1 hour without experiencing any adverse health effects other than mild transient adverse health effects (e.g., minor eye irritation) or perceiving a clearly defined objectionable odor.

ERPG-2 is the maximum airborne concentration below which nearly all individuals could be exposed for up to 1 hour without experiencing or developing irreversible or serious health effects or symptoms that could impair their ability to take protective action.

ERPG-3 is the maximum airborne concentration below which nearly all individuals could be exposed for up to 1 hour without experiencing or developing life-threatening health effects.

When an ERPG was not available, the Time Weighted Average Threshold Limit Value (TWA-TLV), or the odor threshold (a chemical-specific concentration at which an odor can be detected by humans) were used to gauge the potential health hazard of emitted chemicals. In addition, when a TWA-TLV or odor threshold was below the ERPG, the lower of the two (TWA-TLV or odor threshold) was used in the assessment.

The model results were compared to ERPG-1 (the most health protective guideline) for H_2S, ammonia, and toluene, and ERPG-2 for HCN (because there is not an ERPG-1 for HCN). For the other compounds, including metals, the model results were compared to TWA-TLV or the odor threshold.

5.3.2 Results of Evaluation of Estimated Exposure Point Concentrations for Chemicals of Interest at Perimeter of Work Area

Results of the evaluation using the SCREEN model (presented in detail in Appendix B) indicate that in the event of an uncontrolled release from the perimeter of the work area:

- At the perimeter of the work area, all estimated exposure point concentrations for chemicals of interest are below their respective ERPGs and TWA-TLVs, thus adverse, acute health effects are not expected to occur beyond the work area perimeter.
- At the perimeter of the work area, the estimated exposure point concentration for H_2S is approximately at the detection/recognition odor threshold. At this concentration, the odor of H_2S may be noticeable, however, the concentration of H_2S would not likely be irritating to the eyes or respiratory system.
- Establishment of Emergency Response Zones as part of this CCP is not necessary.

In summary, in the event that a release of chemicals were to occur along the perimeter of the work area, concentrations of airborne chemicals of interest reaching the nearest inhabited residence are not expected to produce even mild acute health effects.

5.4 Analysis of Potential Credible Worst-Case Air Emissions Scenario

An evaluation was performed to identify the potential credible worst-case air emissions scenario for the purpose of planning for a potential Community Relocation Alert. The evaluation analyzed the distance traveled and expected concentrations of an uncontrolled release of chemicals of interest to the air.

LFR Levine Fricke engineers and ChemRisk analysts defined the potential credible worst-case air emissions scenario to be an uncontrolled, untreated release of soil gas from the soil-gas treatment system discharge point. U.S. EPA's air dispersion model, SCREEN, was used to estimate exposure point concentrations of chemicals of interest arising from untreated air emissions from the soil-gas discharge point. The model used the following operating parameters for the discharge point:

1. Soil-gas discharge pipe height: 8 feet (2.83 meters [m])
2. Soil-gas discharge pipe diameter: 6 inches (0.15 m)
3. Release temperature: 373 Kelvin (K)
4. Ambient temperature: 293 K

5. Concentrations of released substances are the 95% upper confidence limit of the mean (UCLs) for each substance

To yield the most conservative one-hour exposure point concentration estimate to protect the public, the SCREEN model was run under an urban setting for a flat terrain, and for a full range of meteorological conditions. The estimated ground-level concentrations for H_2S, HCN, ammonia, and toluene were compared to emergency response planning guidelines (ERPGs) (AIHA 1996).

The model used ERPG-1 (the most conservative guideline) for H_2S, ammonia, and toluene, and ERPG-2 for HCN (because there is no ERPG-1 for HCN). For H_2S, estimated concentrations were additionally compared with detection odor thresholds.

Results of the SCREEN model (presented in Appendix B) indicate that, in the event of an uncontrolled release from the soil-gas discharge point:

- the maximum ground level concentrations would occur at a distance of approximately 55 feet from the soil-gas discharge point
- ERPG-1 concentration (ERPG-1 is the maximum airborne concentration below which nearly all individuals could be exposed for up to 1 hour without experiencing any adverse health effects other than mild transient adverse health effects [e.g., minor eye irritation] or perceiving a clearly defined objectionable odor.) for H_2S would be exceeded within an approximate radius of 115 feet of the soil-gas discharge point.
- the odor threshold for H_2S would be exceeded within an approximate radius of 2,000 feet of the soil-gas discharge point. This means that between 115 ft and 2,000 ft of the soil-gas discharge point, H_2S concentrations may be high enough to detect an odor, but would not pose adverse health effects.

In summary, in the event that the credible worst-case air emission scenario were to occur, airborne chemicals of interest would not reach the nearest inhabited residence at concentrations that would produce even mild, transient health effect. It should be noted, however, that in the event of this Potential Credible Worst-Case Scenario, a harmless but unpleasant nuisance odor of H_2S might be noticed by some residents.

6.0 EMERGENCY RESPONSE PROCEDURES DURING THE WORK

6.1 Responsibilities

The following Section describes the procedures and responsibilities of Site representatives under various emergency conditions. Figure 5 provides a detailed flowchart of the notification process when a community contingency plan event occurs.

SITE SAFETY OFFICER

The SSO or his designee will remain on site during field activities and will oversee air monitoring and implement response actions if action levels are reached or if any other condition arises requiring emergency response. The SSO will carry portable communication equipment (cellular phone with additional charged batteries) . Prior to beginning construction work, the SSO will:

- verify that the following is available in the work area: eyewash station, and the equipment listed in the HSP.
- have working knowledge of all safety equipment.
- verify that a list of emergency telephone numbers and a map of the most direct route to the nearest hospital has been prominently posted.
- verify that first aid supplies are maintained in the support area.
- **Emergencies that require SSO to contact Incident Commander Directly.** Additionally, in the event of the following CCP events, the SSO will notify the appropriate emergency contacts, as indicated below:If a fire or explosion occurs or an emergency medical response is required, the SSO will notify the Benicia Fire Department,
- If a community relocation is required, the SSO will notify the City of Benicia, Incident Commander

The SSO will then immediately notify the Project Coordinator/the Project Engineer.

As appropriate and at the request of the Incident Commander and the Project Coordinator/Project Engineer, the SSO will notify support services to assist police in the event of a Community Relocation Alert.

Emergencies where SSO contacts Project Coordinator/Project Engineer. In the event that concentrations exceed the Shutdown Alert or Community Alert at the nearest property boundary or there is a natural disaster, the SSO will immediately contact the Project Coordinator/Project Engineer.

PROJECT COORDINATOR

The Project Coordinator will be generally available during remediation activities. The Project Engineer will serve as a backup contact if the Project Coordinator is not available. In the event of the following CCP events, the Project Coordinator/Project Engineer will take the appropriate action as noted below:

- In the case of a fire, explosion or medical emergency, the Project Coordinator or Project Engineer will discuss with the Incident Commander the need for community alert.

- In the case that air emissions exceed the, Community Alert or there is a natural disaster, the Project Coordinator or Project Engineer will contact the Incident Commander.

In addition, in the event of an emergency, the Project Coordinator will immediately notify Granite.

DTSC

In the event of an emergency, if the DTSC representative is not present at the Site the SSO will contact the DTSC representative. The DTSC representative is responsible for notifying all agency personnel in accordance with the notification process shown in Figure 5 and described in Section 3.0 of this CCP. A list of agency contacts and phone numbers is presented in Section 8.0 and will be readily available in the work area at all times.

6.1.1 Air Monitoring and Action Levels

Work plans developed for the work will include a description of air monitoring procedures. As described in Section 5.2.1, these procedures will, at a minimum, include air monitoring at three locations: 1) upwind of the active work area; 2) immediately downwind of the active work area at the perimeter fence; and, 3) at the property line of the nearest inhabited residence.

As discussed in Section 1.1, the prevailing wind direction in the work area is from the south and west. This means that the wind predominantly blows away from residences and towards the work area. At all times, air monitoring will be performed at the property line of the nearest inhabited residence. If wind directions shift during the course of the work, the downwind sampling points will be adjusted accordingly.

When the wind direction is blowing away from occupied residences, exceedance of Shutdown Alert, Community Alert, or Community Relocation Alert air emission action levels immediately downwind of the work area would not be a basis for initiation of alert status, as there would be no residences located downwind of the work area. However, the work being performed would be shut down and appropriate actions would be undertaken (see section 6.2.1) until the monitoring indicates concentrations are below the shutdown level. Air monitoring would be conducted at the nearest inhabited residence. In addition, air quality will be monitored in the work area to protect worker health and safety in accordance with the HSP.

The SSO is responsible for:

- ensuring that background air quality data have been measured in the work area before work begins
- ensuring that monitoring equipment is placed at the appropriate locations and at a vertical height of 3 to 6 feet from the ground surface
- relocating equipment appropriately if wind direction changes
- implementing the appropriate response action if air emissions exceed action levels (Table 1)

6.1.2 Shutdown Alert

A Shutdown Alert will be issued as the first response to contingency events, as described below.

6.1.2.1 Air Emissions above Action Levels

If air emissions exceed Shutdown Alert action levels (Table 1), the SSO will immediately stop work on site and notify the Project Coordinator/Project Engineer.

Specific measures to lower air emissions may include:

- wetting down soil or use of dust suppressant if excessive dust is released. (These measures are anticipated to be fully effective; it is not anticipated that additional measures [e.g., enclosing the work area] will be needed to control dust)
- containment of liquids with hydrophobic pads, booms, or granular material
- covering source of gases and/or vapors with soil or polyethylene sheeting
- applying a vapor/odor suppressing foam
- placing waste materials into Department of Transportation-approved drums, bins, or other containers, as appropriate

Field work will resume after the air emission are below the shutdown alert action levels.

6.1.2.2 Natural Disaster

If a natural disaster, such as an earthquake resulting in locally damaging ground shaking, occurs during field work, the SSO will immediately halt work. The SSO will notify the Project Coordinator/Project Engineer. If the DTSC representative is not on site, the SSO will notify the DTSC. The Project Coordinator/Project Engineer, DTSC and any emergency response personnel, will determine when field work should resume following a natural disaster.

6.1.3 Community Alert

A Community Alert may be initiated due to a fire, explosion, natural disaster, or air emission. In the event of a fire or explosion the SSO will first notify the Benicia Fire Department and second notify the Project Coordinator/Project Engineer. The Fire Department will act as the incident commander and will initiate a Community Alert, as appropriate.

If air emissions at the property line of the nearest inhabited residence exceed the Community Alert action level, as defined in Table 1, the SSO will first alert the residence in the immediate vicinity and second notify the Project Coordinator/Project Engineer. However, if air emissions exceed the Community Alert action level at another location at the perimeter of the work Area (i.e. not in the direction of the residence), the SSO will notify the Project Coordinator/Project Engineer. The Project Coordinator/Project Engineer will contact the Incident Commander to assess the need for Community Alert or Community Relocation.

If a DTSC representative is not present at the Site, the SSO will also notify the DTSC representative. The DTSC will notify additional agencies, as described in Section 6.4.

The SSO, Health and Safety Director, Project Coordinator/Project Engineer, the DTSC representative, and Benicia Fire Department representative, if appropriate, will determine when field work should resume following a Community Alert. This group will review work procedures to identify modifications in an attempt to prevent the need for future Community Alerts.

6.1.3.1 Fire

If a fire occurs in the work area, the SSO will immediately halt work and will call the Benicia Fire Department. The SSO, with the help of health and safety trained on-site workers, will attempt to contain and, if appropriate, extinguish the fire while awaiting arrival of fire department personnel, if safe to do so. Afterwards, the SSO will notify the Project Coordinator/Project Engineer. The Incident Commander and the Project Coordinator will assess the need for a Community Alert and the procedures described in Section 6.1.3 will be followed. Work will not resume until the SSO, the Project Coordinator/Project Engineer, the DTSC representative, if present, and the Benicia Fire Department personnel, determine it is safe to resume work.

6.1.4 Community Relocation Alert

A Community Relocation Alert may be triggered by the unlikely event of fire or explosion associated with the remedial work, and/or natural disaster, or if air emissions at the property line of the nearest inhabited residence exceed Community Relocation Alert action levels as defined in Table 1.

If work area conditions warrant a Community Relocation Alert, the SSO will:

- contact the City of Benicia Incident Commander to initiate a Community Relocation Alert as described in Section 4.0.
- coordinate with the DTSC representative to report the incident. If the DTSC representative is not present at the Site the SSO will contact the DTSC representative to report the incident.
- provide technical information and recommendations to aid the Incident Commander, Benicia Police Department or Fire Department in emergency response procedures, as required by those agencies
- halt any on-site operations
- assist the Benicia Police Department in relocation procedures, as needed
- contact predetermined support services to notify those schools and day care facilities identified during the pre-emergency planning activities being attended by children of relocated residents

Following a Community Relocation Alert, the Benicia Fire Department, the Health and Safety Director and SSO, and the DTSC will determine when field work may resume. The SSO and the DTSC will modify work procedures to help eliminate the need for future community relocations.

6.2 Response Actions Performed by the Benicia Police Department

If a Community Relocation Order is to be issued, the Benicia Police Department will:

- draft and issue the relocation order(s)
- coordinate relocation within the affected area
- alert the public
- give relocation instructions via appropriate means, which could include radio, television, and/or door-to-door canvassing

Whenever possible, police personnel, aided by fire and public works units, will circulate through the area and issue warnings and relocation orders via loudspeakers.

The Police Department will take the necessary measures to contact citizens with special needs, such as the elderly, infirm, hearing impaired, blind, and non-English speaking, to make them aware of the relocation order, assembly points, and transportation modes and routes available. The police will assist with transportation for citizens with special needs, as appropriate, using the transportation service described in Section 6.2.2, as needed.

The relocation order will contain the following elements, at a minimum:

- why relocation is being ordered
- shelter location(s) and relocation routes
- what to do if a vehicle breaks down
- assembly points for those without transportation

6.2.1 Routes to Relocation Center

In the event of a community relocation, the public will be directed to the Relocation Center using one of the routes depicted in Figure 6.

6.2.2 Transportation to the Relocation Center

In the event of a Community Relocation Alert, Granite will arrange for transportation services to the relocation center through Michael's Transportation of Vallejo, California, for those personnel or affected community members who do not have personal vehicles or do not drive. If transportation services are needed during a Community Relocation Alert, the SSO will call Michael's Transportation. The telephone number and address for Michael's Transportation are presented in Section 8.0.

6.2.3 Supplemental Emergency Response Personnel

Granite will provide, at the direction of the Benicia Police Department, the appropriate number of supplemental personnel to work under the direction of Benicia Police Department personnel for the purpose of providing security to limit access to the area and closely monitor the entrance of all emergency personnel. Supplemental personnel will be provided by DECON Environmental Services, Inc. (DECON), of Hayward, California. DECON will provide state-certified, emergency response-trained personnel, who will assist the Police Department in relocation efforts, traffic control, and access control. If Benicia Police request additional emergency personnel, the SSO will contact DECON. The telephone number and address for DECON are presented in Section 8.0.

6.2.4 Transporting Children from Schools and Day Care Facilities to the Relocation Center

If a Community Relocation Alert should occur during weekdays, the appropriate schools and day care facilities, as well as workplaces of parents or guardians (identified during pre-emergency planning interviews described in Section 4.0) will be notified. Children without transportation to the relocation center after school or day care will be transported from the facilities to the relocation center using the transportation services described in Section 6.2.2.

6.3 Response Actions Performed by the Benicia Fire Department

The Benicia Fire Department is responsible for providing fire fighting, emergency medical assistance, and hazardous materials release response.

In the event of a release of hazardous substances within the work area, the Benicia Fire Department will identify the substance and determine the quantity and extent of release from the information provided by the SSO. The Benicia Fire Department will also note the wind speed and direction and weather conditions. In addition, the SSO will provide Fire Department personnel with meteorological data collected at the Site.

The Benicia Fire Department will then:

- determine the potential for fire, environmental pollution, and toxicity to humans and animals
- establish perimeter control in cooperation with the Benicia Police Department, if appropriate
- instruct all responders to use proper protective gear and clothing
- notify hospitals of incoming patients, if any, and advise hospital and emergency medical personnel of the type of substance the patients have come in contact with, if known
- establish and operate decontamination stations, if appropriate

Reentry into houses in relocation areas will be allowed at the discretion of the Benicia Fire Department, after consultation with technical experts.

6.4 Response Actions Performed by the State

If conditions warrant a Community Relocation Alert, the SSO will notify the Project Coordinator/Project Engineer who will contact the City of Benicia, the Benicia Fire Department and/or Police Department, depending on the nature of the situation. If the DTSC representative is not present at the site the SSO will contact the DTSC representative. The DTSC representative will contact representatives of OEHHA, CIWMB, SCDEM, RWQCB and SOES, to alert the various agencies of the situation. It is the responsibility of the local responding agency (i.e., City of Benicia, the Benicia Fire Department, and the Benicia Police Department) to decide whether relocation is warranted.

6.5 Media Inquiries During Contingency Event

In the event of a potential emergency, members of the media may arrive at the work area seeking information about the nature and severity of the situation. The following guidelines are to be followed to reduce the possible effects of the media members in

affecting mitigation efforts, protect their health and safety, and direct them to the DTSC Public Participation Specialist or the Granite Community Liason to answer their questions:

- Only authorized personnel will be allowed entrance into the work area
- Benicia police will direct the media to a safe, off-site location where they can contact the spokesperson
- During a potential emergency, the Benicia Police Department, Benicia Fire Department, and other on-site agency representatives can make comments to the media if their comments pertain to emergency procedures
- Telephone calls from media representatives are to be directed to the above mentioned spokespersons designated by Granite, and the DTSC.

7.0 RELOCATION CENTER LOCATION, STAFFING, AND SERVICES

In the event of a Community Relocation Alert, the City of Benicia Incident Commander and the Benicia Police Department will announce a voluntary relocation for the designated area and notify the American Red Cross (ARC). Relocated people will be directed to Benicia Middle School, Benicia, where they will be received by ARC volunteers.

Upon arrival, relocated people will be registered and will be asked for the address or location of any temporary shelters they have arranged for themselves (friends, relatives). The registration process will allow relocated people to be tracked in case of personal emergencies or in the event other important information pertinent to their situation must be relayed.

If relocated people have not made other arrangements for shelter, ARC will refer them to local motels. If a sufficient number of people have not made other arrangements, ARC is prepared to operate an overnight shelter at Benicia Middle School.

If a Community Relocation is issued, the designated center location is:

Benicia Middle School
1100 Southampton Road
Benicia, California 94510
(707) 747-8340

Contact: Guy Creighton, Benicia Unified School District Maintenance Group, (707) 747-8300, Ext. 1296

Capacity: 450-500 persons seated (estimated 300 overnight stay)

The shelter will be supplied in advance with first aid, food, water, clothing, blankets, and other needed equipment. Staffing for the shelter will include a shelter manager, assistants, and medical personnel, as appropriate. Provisions will be made to have mental health workers on call for crisis intervention.

Nursing services will be provided to evaluate the physical condition of relocated people, and to answer any questions. Hot and cold drinks and snacks will be served. Coats and blankets will be available for use by relocated people.

Hot and cold drink and snack service will continue as long as the emergency exists.

ARC is prepared to provide meals to relocated people and emergency workers if a relocation extends into regular meal times. Meals will be prepared and served in the Benicia Middle School cafeteria. A mobile canteen will respond to safe areas in the field to serve meals to emergency workers.

8.0 CRITICAL CONTACTS TELEPHONE LIST

EMERGENCY RESPONSE NUMBERS

All Medical Emergencies	**(707) 745-3411**
Sutter Solano Medical Center, Vallejo	(707) 554-4444
Benicia Fire Department	(707) 745-3411
Benicia Police Department	(707) 745-3411
State Office of Emergency Services Hotline	(800) 852-7550 (emergencies only)
National Emergency Response Center Hotline (emergencies only)	*inside state* (800) 424-8802 *outside state* (916) 262-1621
Northgate Environmental Management	
Ted Splitter, Project Coordinator	office (415) 492-0310 mobile (510) 435-4609
Alan Leavitt, Project Engineer	office (510) 839-0415 mobile (510) 326-1507
Michael Stoll, Site Safety Officer	office (510) 839-0688 mobile (510) 381-2330
Irene S. Fanelli, CIH/Health and Safety Director	office650) 347-9205 mobile(650) 906-7397 pager (888) 881-5128
Department of Toxic Substances Control	
Paul Ruffin, Project Manager	office (916) 323-3369
Roman Racca, Public Participation Specialist	(916) 445 9543
City of Benicia	
Otto Giuliani, City Manager Incident Commander	(707) 746-4210 24-hr. (707) 746-3412

Office of Environmental Health Hazard Assessment
Case Officer (916) 324-2829

California Integrated Waste Management Board

Jacque Graber, Case Officer (916) 341-6353

Solano County Department of Environmental Health

Cliff Covey, Case Officer (707) 421-6770 ext. 164

Regional Water Quality Control Board

Alec W. Naugle (510)622-2510

Department of Transportation (Caltrans) (800) 427-7623

Granite Management Corporation

Jason Keadjian, Community Liaison (707) 745-2112

Relocation Center (707) 747-8340

Benicia Middle School
1100 Southampton Road, Benicia, California 94510
Contact: Guy Creighton, Benicia Unified School District,
Maintenance Group (707) 747-8300 ext. 1296

Relocation Transportation

Michael's Transportation (707) 643-2099

Supplemental Emergency Response Personnel

DECON Environmental Services
23490 Connecticut Street, Hayward, CA 94545 (510) 732-6444
Contact: Wayne Pelletier, Account Representative

9.0 INFORMATION REPOSITORY LOCATIONS

Benicia Public Library
150 East L Street, Benicia, California 94510
(707) 746-4351
Contact: Reference Desk
Copy Costs: $0.15 per copy

Hours:	M, T:	12 p.m. to 9 p.m.
	W:	10 a.m. to 9 p.m.
	Th, Sat:	10 a.m. to 5 p.m.
	F:	12 p.m. to 5 p.m.
	Sun:	1 p.m. to 5 p.m. (mid September through mid June, only)

Although not a formal repository, the City of Benicia maintains work-related documents in its offices:

Benicia City Offices
Office of the City Manager
250 East L Street
Benicia, California 94510
(707) 746-4210
Contact: Otto Guiliani
Copy Costs: $0.20 per copy up to 40 copies;
then a copy service must be used.

Hours:	M - F:	8:30 a.m. to 5 p.m.
	Sat, Sun:	closed

10.0 SIGNATURES

This Community Contingency Plan for the field activities in Benicia, California, is approved by the following personnel:

Ted Splitter, P.E. — 6/21/01 Date
Project Coordinator

Alan Leavitt, P.E. — 6/21/01 Date
Project Engineer

Michael Stoll, P.E. — 6-27-01 Date
Site Safety Officer

Irene S. Fanelli, CIH — 6/21/01 Date
Health and Safety Director

THE AMERICAN BOARD OF INDUSTRIAL HYGIENE
INCORPORATED
CERT. NO
4035 CP
EXPIRES
12-31-2001
PENNSYLVANIA 1960
IRENE S. FANELLI, CIH

10.1 Contractor and Subcontractor Personnel

Contractor and Subcontractor Agreement

1. Contractor certifies that it has received a copy of this CCP, and will verify that its employees and subcontractors, if any, are informed of and will comply with the guidelines in this CCP.

2. Contractor further certifies that it and its subcontractors, if any, have read, understand, and will comply with all provisions of this CCP, and will take full responsibility for the safety of employees.

Contractor	Signature	Date

10.2 Visitors

I have read this Community Contingency Plan; I understand it; I have been briefed on the site-specific hazards; and I will comply with the procedures described hercin.

Also, in compliance with Proposition 65 notification requirements, I understand that this area within the fence perimeter may contain chemicals known to the State of California to cause cancer and/or reproductive harm.

Visitor	Company/Agency	Signature	Date

11.0 REFERENCES

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California Environmental Protection Agency (Cal/EPA), Department of Toxic Substances Control (DTSC). 1995. Revised Consent Order, Docket No. 94/94-004. May 15.

Greiner (formerly Bissell & Karn). 1991. Topographic Survey. November 6.

National Institute for Occupational Safety and Health (NIOSH). 1985. Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities. Office of Safety and Health Administration; U.S. Coast Guard; U.S. Environmental Protection Agency. U.S. Government Printing Office. Washington, D.C. October.

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Levine·Fricke·Recon Inc. (LFR). 1997. Feasibility Study and Public Health Evaluation of Remedial Alternatives North Canyon Operable Unit, Former Solano County Sanitary Landfill, Benicia, California. April 18.

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_____. 2001. Transportation Plan for the Remediation of the Blake Court and Black Material Areas, Former Solano County Sanitary Landfill, Benicia, California. June 29.

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Sax, N. Irving. 1993. Update to Dangerous Properties of Materials, 8th edition. 1992. Van Nostrand Reinhold Company, Inc. New York, New York.

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_____. 1989. Guidance on Applying the Data Quality Objectives Process for Ambient Air Monitoring Around Superfund Sites (Stages I and II). (EPA-450/4-89-015). August.

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_____. 1993. Air/Superfund National Technical Guidance Study Series, Volume IV - Guidance for Ambient Air Monitoring at Superfund Sites (Revised). (EPA-451/R-93-007.

12.0 GLOSSARY OF TERMS

Action levels: Concentrations at which a detection would trigger an action, such as a work shutdown or Community Alert.

Air monitoring: Monitoring of air for chemicals of interest using real-time instruments.

Contamination reduction zone: The transition area between the active work area and public accessible area. The area is designed to reduce the potential for the clean areas to become impacted by other site activities. This area contains a designated place for decontamination of equipment.

Exclusion zone: Area in which chemical and physical hazards are known or suspected to exist. Usually contains an active work area.

In place treatment: Treatment of subsurface soil that does not require prior excavation of the soil.

Support zones: Location of the administrative and other support functions needed to keep the operations in the exclusion and contamination reduction zones running smoothly.

Table 1
Air Emission Action Levels

Compound	Shutdown Alert [a,g] (response time of instrument)	Community Alert[b,g] (5 minute duration)	Community Relocation Alert [c,g] (30 minute duration)
Methane (LEL) Combustible gas meter	>10% of LEL	>10% of LEL	>15% LEL (or 20% LEL for 5 min.)
H_2S[d]	>500 ppb	> 1 ppm	> 5 ppm
VOC (OVM-PID)[e]	> 12.5 ppm	>25 ppm	> 50 ppm
Ammonia	> 1.5 ppm	> 5.0 ppm	> 15 ppm
HCN	> 1 ppm	> 1 ppm	> 2 ppm
Total dust	> 1 ppm	> 2.5 mg/m^3	N.A.[f]

NOTES

a. During shutdown Alert conditions, work will be halted, an attempt will be made to identify the source of the emission, and immediate measures to reduce emissions will be initiated for any identified source.

b. Community Alert is a request that people go indoors and close their windows, doors, and fireplace dampers. There will be a dilution in concentration of airborne chemicals from work area perimeter to houses.

c. A Community Relocation Alert is an action initiated by SSO and the State's representative. Community Relocation orders are issued and implemented by the Benicia Police and Fire Department. It is assumed that a time delay to contact authorities would transpire. Thus, action levels are set at a low enough level to prevent compromising a person's health during relocation.

d. H_2S concentrations for Shutdown Alert and Community Alert are set to protect residents from throat irritation, coughing, and eye irritation, and to protect asthmatics in the community from increased airway resistance. These levels will not prevent "nuisance" odors, which may be objectionable and cause nausea in some individuals. H_2S has an odor threshold of 12 to 60 ppb.

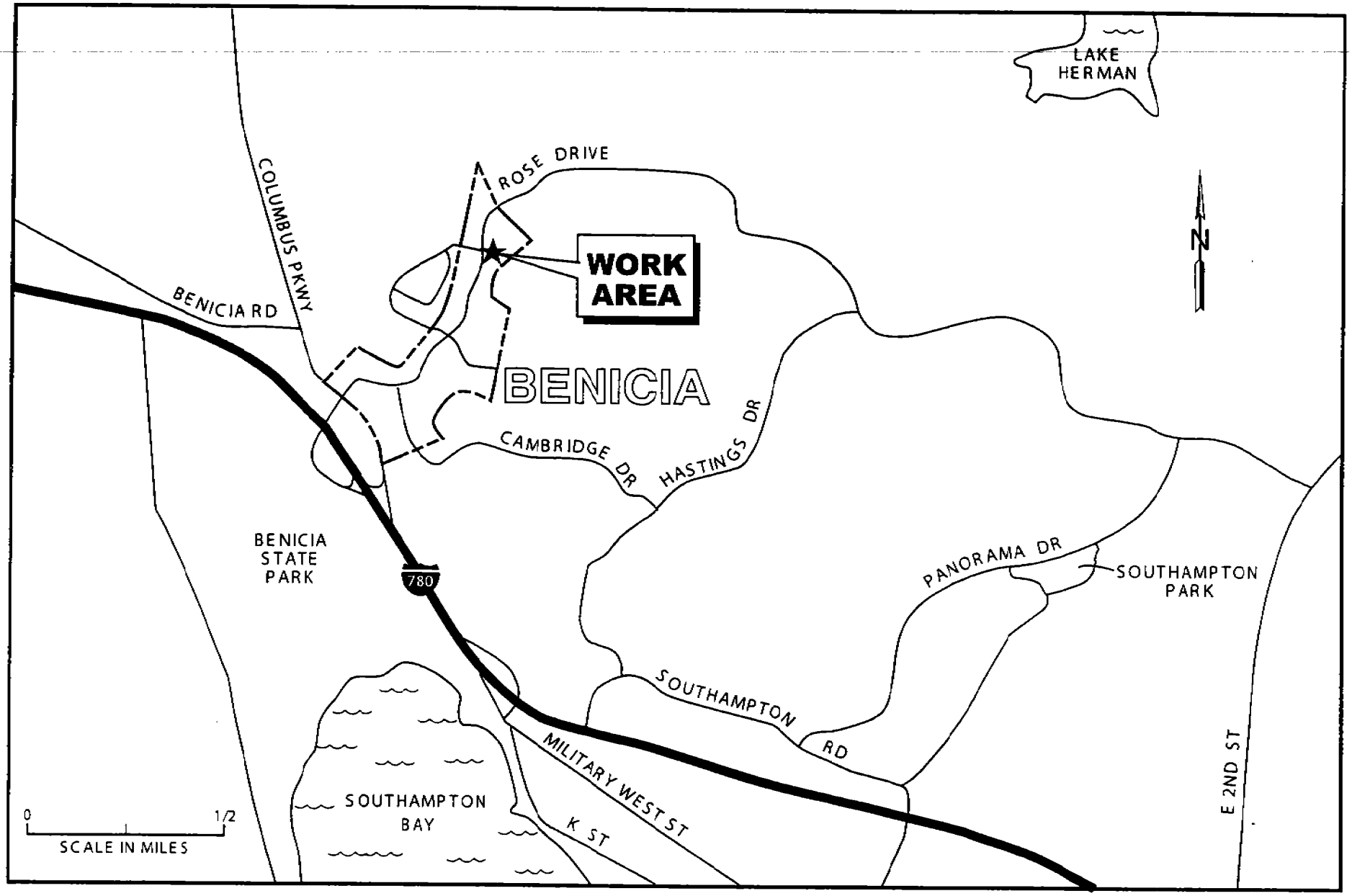
e. The action levels for VOCs were developed based on the chemical toluene.

f. Community Relocation Alert will not occur if dust levels exceed 2.5 mg/m^3 because it would be safer for residents to remain sheltered indoors where the dust levels will be less than 2.5 mg/m^3.

g. When the wind direction is blowing away from inhabited residences, exceedence of Shutdown Alert, Community Alert, or Community Relocation Alert air emission action levels would not be a basis for initiation of alert status, as there would be no residences located downwind of the work area. However, the work would be shut down and appropriate actions would be taken to reduce emission concentrations to below the action level.

Abbreviations

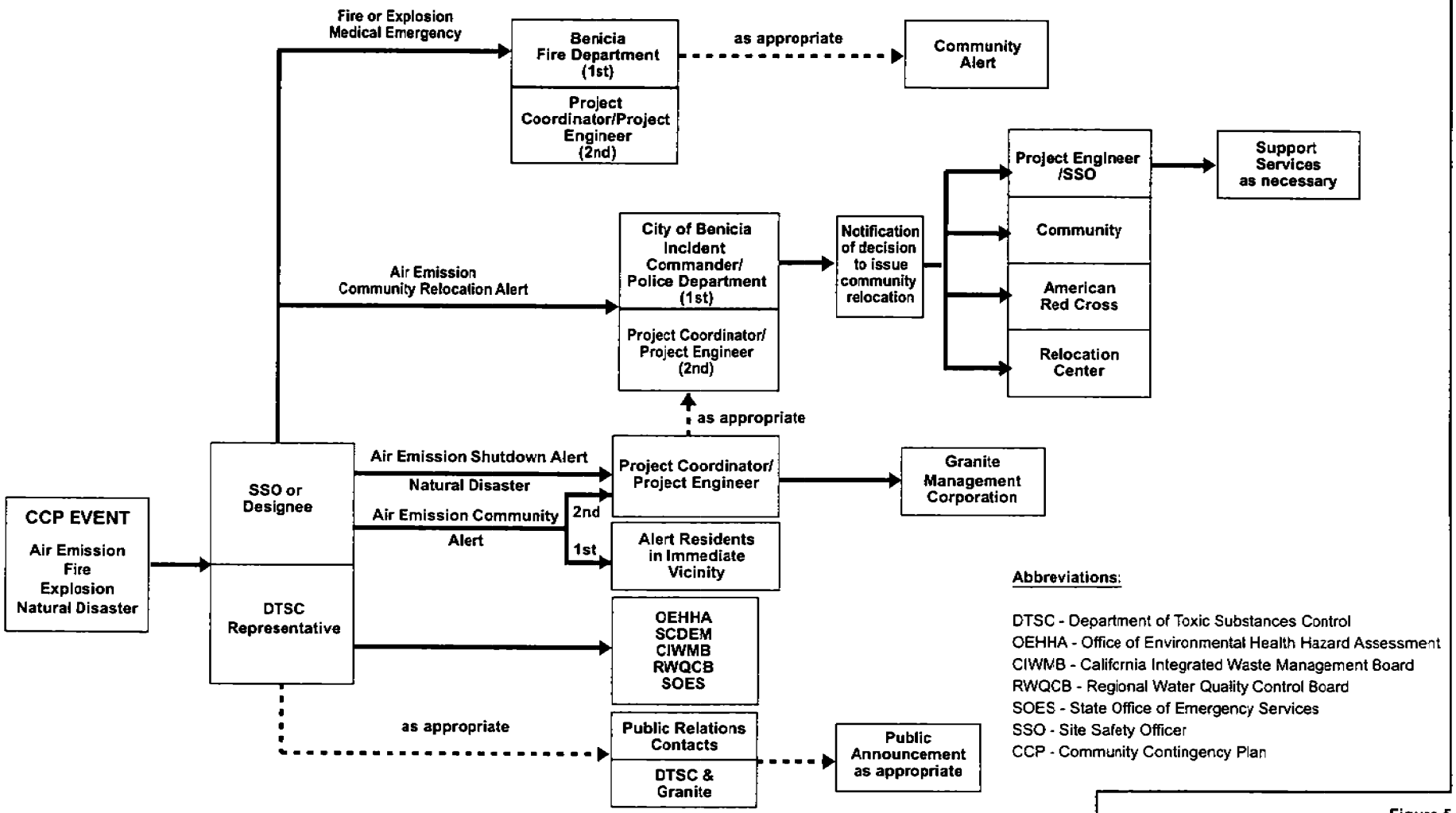
HCN – hydrogen cyanide
H_2S – hydrogen sulfide
LEL – lower explosive limit
mg/m^3 – milligrams per cubic meter
N.A. – not applicable
OVM – organic vapor meter
PID – photoionization detector
ppm – parts per million
ppb – parts per million
SSO – site safety officer
VOCs – volatile organic compounds



northgate environmental management, inc.

Figure 1
SITE LOCATION

January 2001 ¥ Proj. No. 1056.01



Abbreviations:

DTSC - Department of Toxic Substances Control
OEHHA - Office of Environmental Health Hazard Assessment
CIWMB - California Integrated Waste Management Board
RWQCB - Regional Water Quality Control Board
SOES - State Office of Emergency Services
SSO - Site Safety Officer
CCP - Community Contingency Plan

Note: SSO will contact DTSC representatives if they are not present at Site.

Figure 5
COMMUNITY CONTINGENCY PLAN NOTIFICATION PROCESS

northgate environmental management, inc.

May 2001
Proj. No. 1056.01

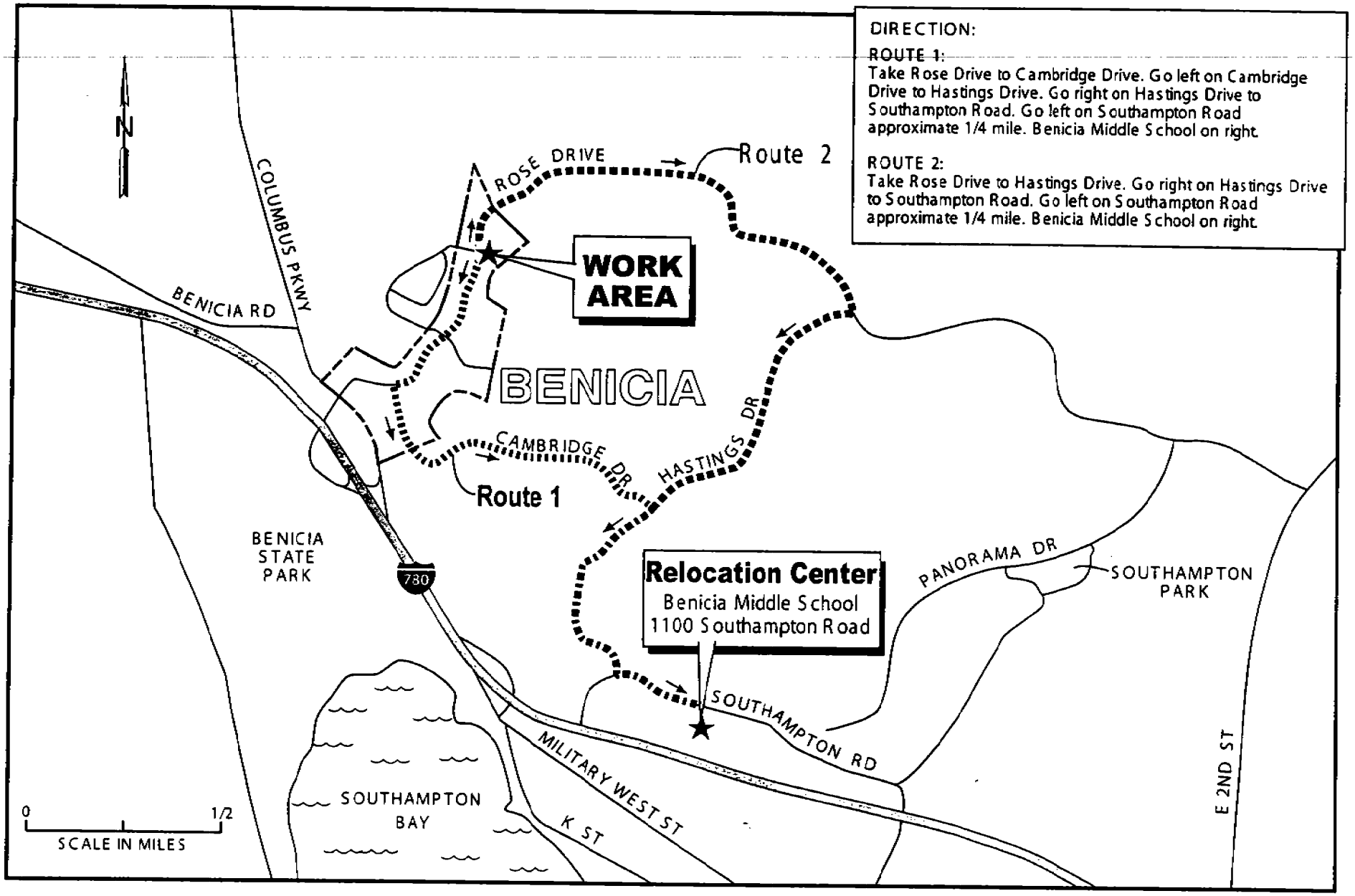


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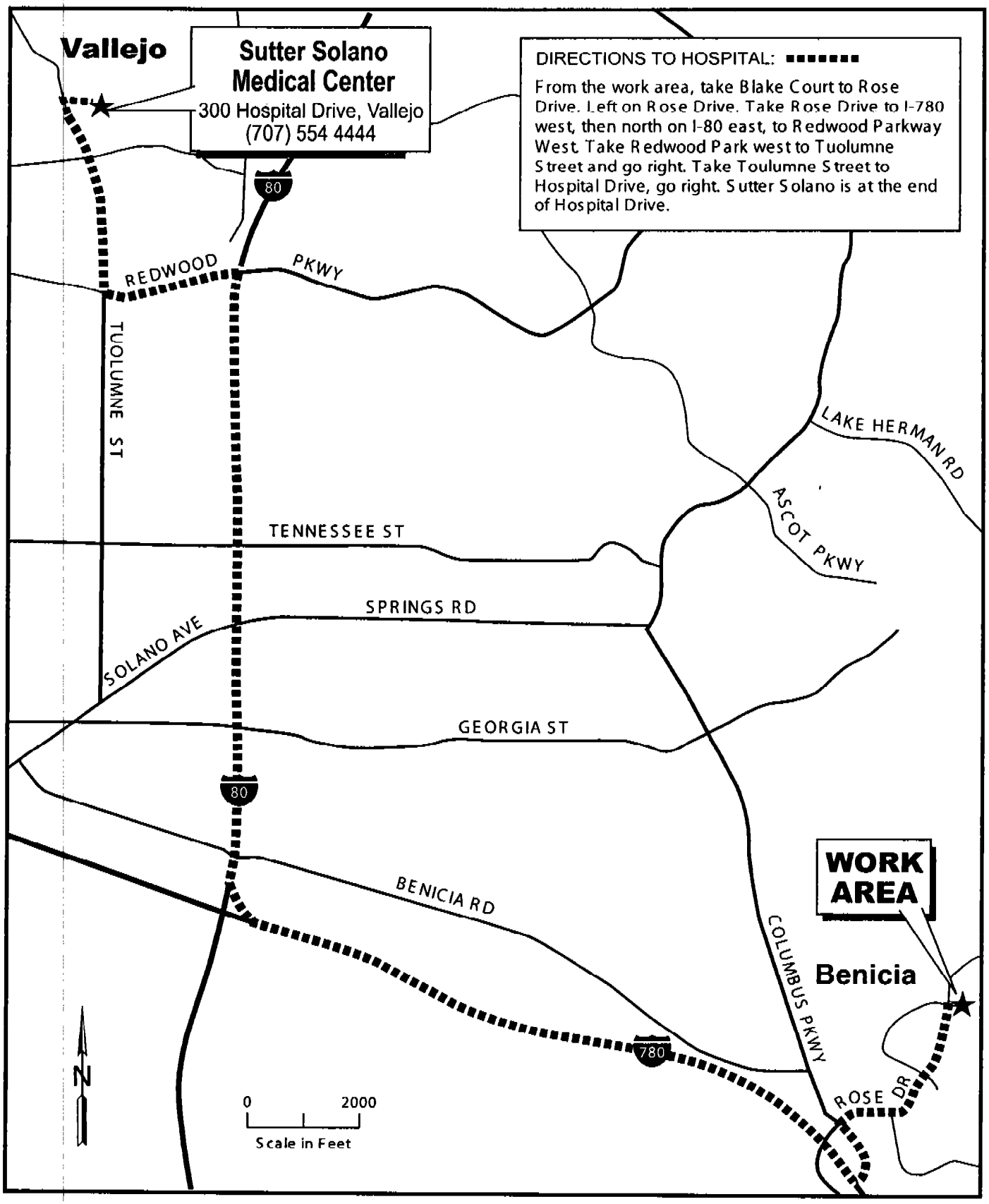
Figure 6
ROUTES TO RELOCATION CENTER at BENICIA MIDDLE SCHOOL
1100 Southampton Road, Benicia, California
December 2000 ¥ Proj. No. 1056.01



northgate environmental management, inc.

Figure 7
HOSPITAL ROUTE MAP
Sutter Solano Medical Center, Vallejo, California
May 2001 ¥ Proj. No. 1056.01

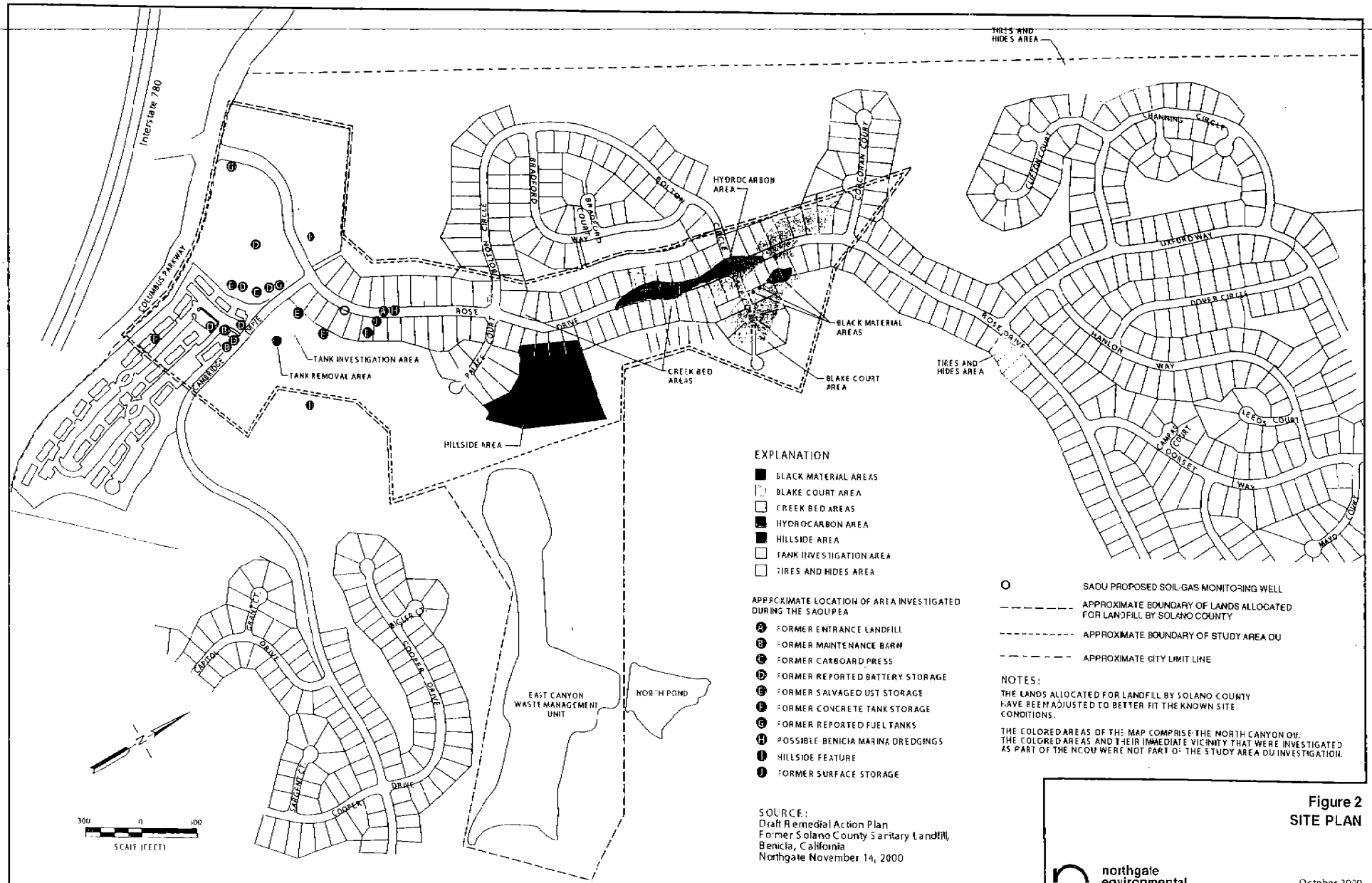
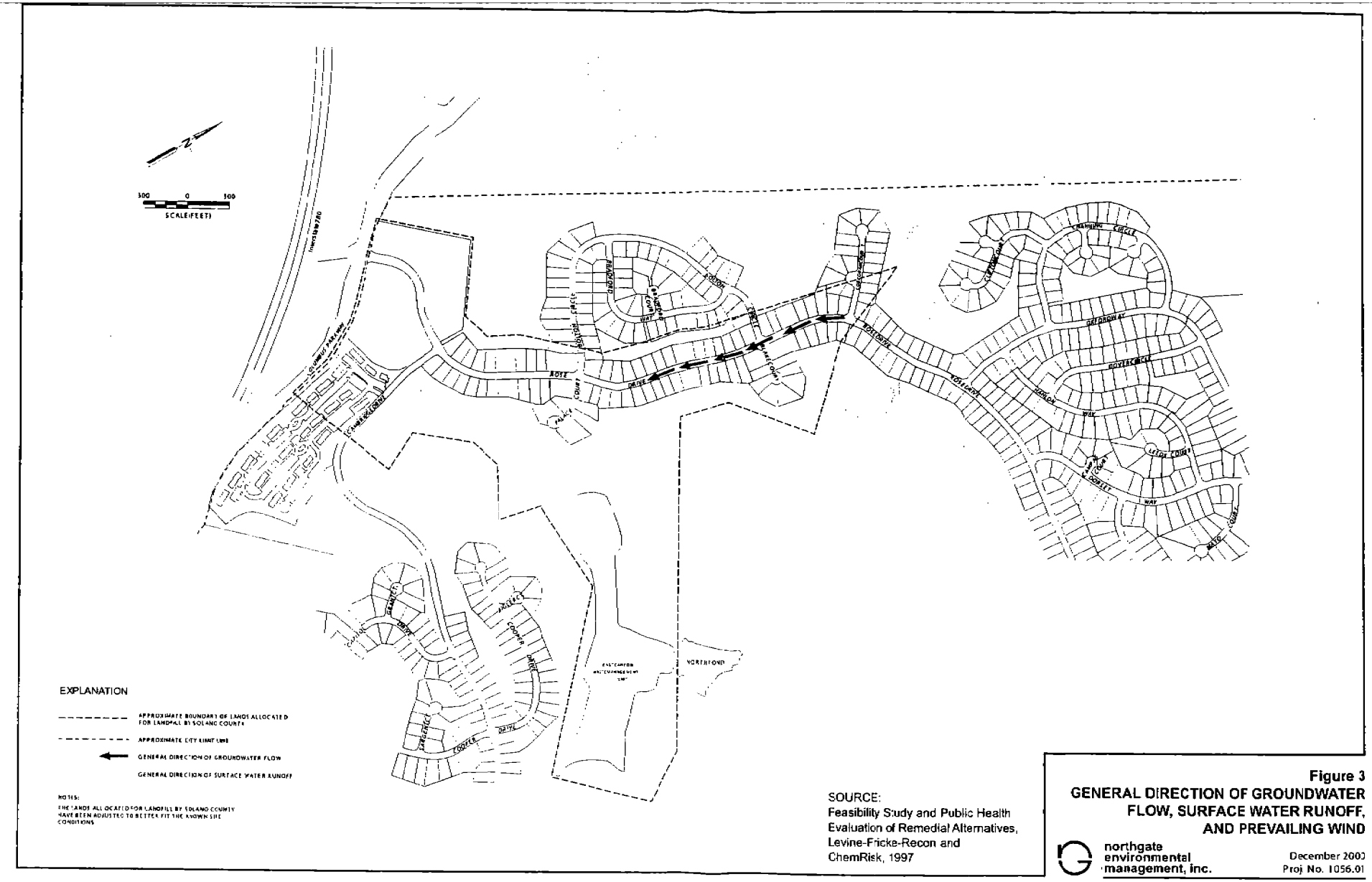


Figure 2
SITE PLAN



SOURCE:
Feasibility Study and Public Health Evaluation of Remedial Alternatives, Levine-Fricke-Recon and ChemRisk, 1997

Figure 3
GENERAL DIRECTION OF GROUNDWATER FLOW, SURFACE WATER RUNOFF, AND PREVAILING WIND

northgate environmental management, inc.

December 2000
Proj No. 1056.01

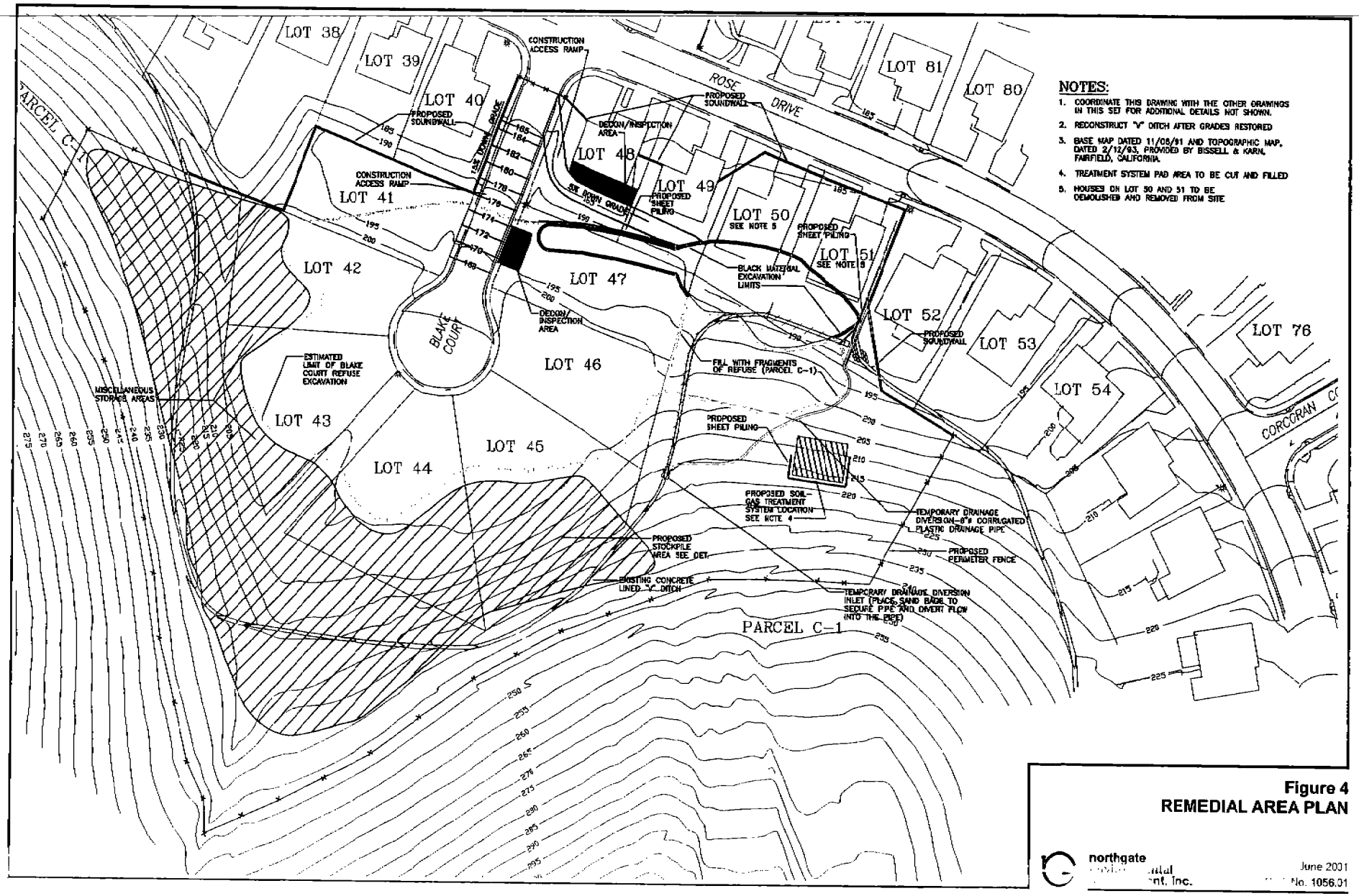


Figure 4
REMEDIAL AREA PLAN

northgate environmental management, inc.

June 2001
No. 1056.01

Appendix A

Unknown Elements

FACTORING IN UNKNOWN ELEMENTS

During implementation of the work, unknown conditions could potentially be encountered. Section 5.4 described the parameters of a "potential worst credible scenario," which, although improbable, could potentially occur during the work. Northgate also considered other possible scenarios of less potential impact to the community. Scenarios considered, along with the planned response actions,. are summarized in Table A-1.

Table A-1

Possible Non-Routine Scenarios and Planned Response Actions

1. **Exceedance of Air Emission Action Levels during Excavation of Black Material:** Odor-suppressing foam will be applied as necessary to control soil-gas emissions. In the event that odor-suppressing foam does not adequately control soil-gas emissions, the excavation will be temporarily stopped and the excavation area will be covered with soil and/or visquene sheeting. A portable structure may be erected over the excavation area, if necessary, to further control air emissions. Air inside the portable structure would be treated prior to discharge.

2. **Presence of Free Liquid in Black Material:** A supply of admixture components (e.g., cement, lime, and fly ash) and overburden soil will be stored on site while Black Material is excavated. These materials will be added to the Black Material, if necessary, to eliminate free liquid content prior to loading.

3. **Presence of Subsurface Obstructions:** If the soil-mixing auger encounters an obstruction which causes refusal, the location will be recorded and the auger will be moved to adjacent drilling locations to complete the soil-mixing activity. Afterwards, the obstruction area will be excavated to identify and remove the subsurface object, if possible. If Black Material in this area emits soil gas, which exceeds action levels, it will be treated as described in Item 1 above. If this Black Material contains free liquid, it will be stabilized as described in Item 2 above.

4. **Instability of Excavation:** If the excavation sidewalls are unstable (e.g., potential for sloughing), the excavation will be sloped, benched, or shored, as necessary, to maintain stability.

5. **Presence of Water in Excavation:** If water enters the excavation, it will be contained and removed as necessary to protect the excavation area. Standing water, if present, will be pumped from the excavation area, and temporarily stored on site. If free liquid remains in the Black Material, it will be stabilized prior to excavation, as described in Item 2 above. Damaged water lines or subdrains will be repaired or replaced as appropriate.

6. **Breakdown of Truck Containing Excavated Materials:** If a truck leaves the exclusion zone and has a mechanical problem (e.g., flat tire, engine problems, etc.), the driver will remain with the vehicle and notify the contractor or Northgate SSO immediately. The specific response will depend on the type of vehicle and nature of the problem. If the vehicle cannot be readily repaired, the trailer or transfer box will be transferred to a new rig or the vehicle will be towed back to the work zone or other safe location for unloading or repair, as appropriate.

7. **Spill of Excavated Material from Truck:** If a truck containing excavated material loses all, or a portion, of its load within the residential area, the area will be immediately cordoned off, and an exclusion zone will be established. The area will be monitored for air emissions while the spilled material is reloaded into the truck, or transferred to a new, replacement truck.

8. **Exceedance of Soil-Gas Emission Limits:** If the soil-gas treatment system or its components discharge air at concentrations above the specified action levels, the system will automatically shut off. Soil gas extraction or soil-mixing operations will be temporarily discontinued. Appropriate maintenance or repair activities will be undertaken prior to resuming routine operation.

Appendix B

ChemRisk Air Dispersion Modeling Results

Overview of SCREEN3 Air Dispersion Model

The SCREEN3 (dated April 3, 1996) model is a US Environmental Protection Agency (USEPA) Gaussian air dispersion model. It is a companion document to the USEPA's revised screening procedures document, "Screening Procedures for Estimating the Air Quality Impact of Stationary Sources, Revised," EPA-450/R-92-019.

The SCREEN3 model was developed to provide a screening-level method for obtaining chemical concentrations based on simplified analyses of dispersion. It estimates maximum ground-level concentrations and distances to maximum concentrations from both point (soil-gas discharge point) sources, and area sources. (Area sources are modeled using a virtual point source procedure.) The model uses a Gaussian plume model to estimate substance concentrations from continuous sources, which incorporates source-related factors and meteorological factors. It is assumed that the released substance does not undergo any chemical reactions and that no other removal processes, such as wet or dry deposition, act on the plume during its transport from the source.

SCREEN3 examines potential dispersion under a full range of meteorological conditions, including all stability classes and wind speeds to find maximum impacts. The use of full meteorology is needed to calculate maximum concentrations that result from the combination of wind speed and stability class. Default meteorological data are included in the SCREEN3 model.

For the evaluations presented in Sections 5.3 and 5.4 of this CCP, SCREEN3 was run using a unit source concentration, which is 1 gram/second. Downwind concentrations of a substance are related in a linear fashion to the source concentration; that is, a doubling of the source concentration doubles the downwind concentration. Thus, potential concentrations at downwind areas are estimated by multiplying the dispersion results by the estimated source concentrations.

Tables B-1A, B-1B and B-2 present the modeling input parameters and results for the potential air emission of vapors and fugitive dust at the perimeter of the work area. The results and conclusions of the evaluation are discussed in Section 5.3 of this CCP.

Table B-3 and B-4 present the modeling input parameters and results for potential credible worst-case air emissions scenario. The results and conclusions of the evaluation are discussed in Section 5.4 of this CCP.

TABLE B-1A
VAPOR EMISSIONS DURING BLACK MATERIAL EXCAVATION

Chemical	Molecular Weight	Soil Gas Concentrations (ppmv)	Soil Gas Concentrations (g/m^3)	Emission Rate ($g/m^2/sec$)
Methane	16	6.7E+05	4.4E+02	5.1E-04
Hydrogen Cyanide	27	3.6E+00	3.9E-03	4.6E-09
Hydrogen Sulfide	34	1.2E+02	1.7E-01	2.0E-07
Toluene	92	5.9E+01	2.2E-01	2.6E-07
Carbon dioxide	44	2.1E+05	3.7E+02	4.3E-04
Benzene	78	6.5E-02	2.1E-04	2.4E-10
Bromomethane	94.95	3.3E-02	1.3E-04	1.5E-10
Carbon Tetrachloride	153.84	3.1E-02	1.9E-04	2.2E-10
Chlorobenzene	112.56	3.2E-02	1.5E-04	1.7E-10
Chloroform	119.38	3.2E-02	1.6E-04	1.8E-10
Methyl chloride	50.49	3.2E-02	6.7E-05	7.7E-11
Methylene chloride	84.94	8.2E-01	2.9E-03	3.3E-09
Tetrachloroethene	165.84	3.8E-02	2.6E-04	3.0E-10
Trichloroethene	131.4	4.0E-02	2.1E-04	2.5E-10
Vinyl chloride	62.5	3.8E-02	9.7E-05	1.1E-10
cis-1,2-Dichloroethene	96.95	3.1E-02	1.2E-04	1.4E-10
m,p-Xylene	106.16	3.6E-02	1.5E-04	1.8E-10
o-Xylene	106.16	3.1E-02	1.4E-04	1.6E-10
Ammonia	17	1.0E+01	7.2E-03	8.4E-09

Total Volume of Excavation	1908 m^3	Based on FS estimate of 2500 cubic yards of Black Material
Duration of Excavation	5 days	Assumed
Volume Excavated Every Day	382 m^3 soil/d	Estimated
Soil Porosity	0.15 m^3 air/m^3 soil	Based on Remedial Investigation Results
SCREEN		
Modeled Length	78	Assumed based on feasibility study information
Modeled Width	22	Assumed based on feasibility study information
Distance to Receptor	27 m	Estimated
Max Conc at Receptor for unit emissions(1g-s/m2)	4.34E+07 ug/m^3 per $g/s\text{-}m^2$	Model Results

Screen Modeling Options Selected

- URBAN MODEL
- SEARCH all distances for Max
- Full METEOROLOGY

TABLE B-1B
SCREEN MODEL FOR VAPOR EMISSIONS DURING BLACK MATERIAL EXCAVATION

Distance from Source to Receptor (m) -> Max Concentration (ug/m3) for Unit Emission ->				40 4.40E+07		50 2.07E+07		100 6.37E+06		150 3.10E+06		500 3.60E+05	
Chemical	Tox. Criteria	Tox. Factor (ppmv)	Tox.Factor (ug/m³)	Conc. (ug/m³)	Hazard	Conc. (ug/m³)	Hazard	Conc. (ug/m³)	Hazard	Conc. (ug/m³)	Hazard	Conc. (ug/m³)	Hazard
Hydrogen Cyanide	ERPG-2	10	1.10E+04	2.00E-01	1.81E-05	9.42E-02	8.53E-06	2.90E-02	2.63E-06	1.41E-02	1.28E-06	1.64E-03	1.48E-07
Hydrogen Sulfide	ERPG-1	0.1	1.39E+02	8.64E+00	6.21E-02	4.07E+00	2.92E-02	1.25E+00	9.00E-03	6.09E-01	4.38E-03	7.07E-02	5.08E-04
Hydrogen Sulfide	Odor	0.0045	6.26E+00	8.64E+00	1.38E+00	4.07E+00	6.50E-01	1.25E+00	2.00E-01	6.09E-01	9.73E-02	7.07E-02	1.13E-02
Toluene	ERPG-1	50	1.88E+05	1.13E+01	6.03E-05	5.34E+00	2.84E-05	1.64E+00	8.73E-06	7.99E-01	4.25E-06	9.28E-02	4.93E-07
Benzene	ERPG-1	50	1.60E+05	1.05E-02	6.58E-08	4.94E-03	3.10E-08	1.52E-03	9.53E-09	7.40E-04	4.64E-09	8.59E-05	5.39E-10
Benzene	TLV-TWA	10	3.19E+04	1.05E-02	3.29E-07	4.94E-03	1.55E-07	1.52E-03	4.76E-08	7.40E-04	2.32E-08	8.59E-05	2.69E-09
Bromomethane	TLV-TWA	1	3.88E+03	6.53E-03	1.68E-06	3.07E-03	7.91E-07	9.45E-04	2.43E-07	4.60E-04	1.18E-07	5.34E-05	1.38E-08
Carbon Tetrachloride	ERPG-1	20	1.26E+05	9.85E-03	7.82E-08	4.63E-03	3.68E-08	1.43E-03	1.13E-08	6.94E-04	5.51E-09	8.06E-05	6.40E-10
Carbon Tetrachloride	TLV-TWA	5	3.15E+04	9.85E-03	3.13E-07	4.63E-03	1.47E-07	1.43E-03	4.53E-08	6.94E-04	2.21E-08	8.06E-05	2.56E-09
Chlorobenzene	Odor(d)	1.3	5.98E+03	7.43E-03	1.24E-06	3.49E-03	5.84E-07	1.08E-03	1.80E-07	5.23E-04	8.74E-08	6.08E-05	1.02E-08
Chloroform	TLV-TWA	10	4.88E+04	8.07E-03	1.65E-07	3.80E-03	7.77E-08	1.17E-03	2.39E-08	5.68E-04	1.16E-08	6.60E-05	1.35E-09
Methyl chloride	ERPG-2	400	8.26E+05	3.41E-03	4.13E-09	1.60E-03	1.94E-09	4.94E-04	5.97E-10	2.40E-04	2.91E-10	2.79E-05	3.38E-11
Methyl chloride	TLV-TWA	50	1.03E+05	3.41E-03	3.30E-08	1.60E-03	1.55E-08	4.94E-04	4.78E-09	2.40E-04	2.33E-09	2.79E-05	2.70E-10
Methylene chloride	ERPG-1	200	6.95E+05	1.46E-01	2.10E-07	6.85E-02	9.86E-08	2.11E-02	3.03E-08	1.03E-02	1.48E-08	1.19E-03	1.71E-09
Methylene chloride	TLV-TWA	100	3.47E+05	1.46E-01	4.19E-07	6.85E-02	1.97E-07	2.11E-02	6.07E-08	1.03E-02	2.95E-08	1.19E-03	3.43E-09
Tetrachloroethene	Odor(d)	47	3.19E+05	1.32E-02	4.15E-08	6.22E-03	1.95E-08	1.92E-03	6.01E-09	9.32E-04	2.92E-09	1.08E-04	3.40E-10
Trichloroethene	TLV-TWa	50	2.69E+05	1.08E-02	4.03E-08	5.10E-03	1.90E-08	1.57E-03	5.84E-09	7.64E-04	2.84E-09	8.87E-05	3.30E-10
Vinyl chloride	TLV-TWA	5	1.28E+04	4.95E-03	3.88E-07	2.33E-03	1.82E-07	7.17E-04	5.61E-08	3.49E-04	2.73E-08	4.05E-05	3.17E-09
cis-1,2-Dichloroethene	TLV-TWA	200	7.93E+05	6.24E-03	7.87E-09	2.94E-03	3.70E-09	9.04E-04	1.14E-09	4.40E-04	5.55E-10	5.11E-05	6.44E-11
m,p-Xylene	Odor(d)	0.62	2.69E+03	7.86E-03	2.92E-06	3.70E-03	1.37E-06	1.14E-03	4.23E-07	5.54E-04	2.06E-07	6.43E-05	2.39E-08
o-Xylene	Odor(d)	5.4	2.34E+04	6.90E-03	2.94E-07	3.24E-03	1.38E-07	9.98E-04	4.26E-08	4.86E-04	2.07E-08	5.64E-05	2.41E-09
Ammonia	ERPG-1	25	1.74E+04	3.68E-01	2.12E-05	1.73E-01	9.96E-06	5.33E-02	3.06E-06	2.59E-02	1.49E-06	3.01E-03	1.73E-07
Ammonia	Odor(d)	17	1.18E+04	3.68E-01	3.11E-05	1.73E-01	1.46E-05	5.33E-02	4.51E-06	2.59E-02	2.19E-06	3.01E-03	2.55E-07

EPRG - 1:

Odor(d): Geometric Mean Odor Threshold (detection)

TLV-TWA: Threshold Limit Values-Time Weighted Average

TABLE B-2
ESTIMATED FUGITIVE DUST EMISSIONS DURING BLACK MATERIAL OVERBURDEN EXCAVATION

MODELING INPUT PARAMETERS	VALUE	COMMENTS
Air Dispersion Parameters		
Modeled Length	77.6 m assumed	
Modeled Width	22.2 m assumed	
Minimum Distance to Receptor	27.43 m	
Maximum Downwind Concentration for unit emissions	4.34E+07 ug/m3 per g/s-m2	Occurs approximately 39m downwind of source, using SCREEN3 with Areal source, Urban setting, and most conservative meteorologic conditions
Soil Excavation Parameters		
Silt content	50%:	Conservatively high value assumed (source: EPA Guidance 450/1-89-003)
Moisture content	13%:	Conservatively low value assumed (source: EPA Guidance 450/1-89-003)
Total Excavation Volume	1908 m^3:	Based on Feasability Study estimate of 2500 cubic yards of Black Material
Duration of Excavation	5 days:	Based on FS estimate
Daily Excavation Volume	382 m^3/d:	Based on FS estimate
Number of Scrapers	1 unit	
Ratio of Excavation Volume to Haul Distance	1304 m^3/km	Assumes a bucket capacity of 11 m^3 and USEPA Guidance
VKT/day per Scraper	0.29 km/d	Based on USEPA Information
Weight of Scraper	50 Metric tons	Estimated From Construction Equipment Literature
Emission Controls	0.6	Based on USEPA Information
Emissions from Scrapers	0.14 kg/hr	Calculated
Calculated PM-10 Unit Emission Rate from Scrapers	2.2E-5 g/m^2/s	
Total estimated PM-10 unit Rate Emissions	3.3E-5 g/m2/s	The total PM-10 emission is assumed to be 1.5 times greater than calculated emission to account for potential emissions from other soil handling activities.

TABLE B-2
ESTIMATED FUGITIVE DUST EMISSIONS DURING BLACK MATERIAL OVERBURDEN EXCAVATION

SCREEN 3 Model Results for Fugitive Dust Emissions During Black Material Overburden Excavation

Distance From Source to Receptor (m) -> Max concentration (ug/m3) for unit emission->					40m 4.40E+07 ug/m³		50m 6.37E+06 ug/m³		100m 6.37E+06ug/m³		150m 3.10E+06 ug/m³		500m 3.60E+05 ug/m³	
Chemical	Maximum Soil Concentration mg/kg	Enrichment Factor	Emission Rate (g/m²/sec)	Action Level (ug/m³)	Conc. (ug/m³)	Hazard	Conc. (ug/m³)	Hazard	Conc. (ug/m³)	Hazard	Conc. (ug/m³)	Hazard	Conc. (ug/m³)	Hazard
Lead	2,900	7.34	7.00E-07	30 (c)	31	1.0	15	0.50	4.5	0.15	2.2	0.072	0.253	0.0084
Chromium[a]	3,600	4.72	5.60E-07	500 (d)	25	0.049	12	0.023	3.6	0.0071	1.7	0.0035	0.202	0.00040
Zinc[b]	6,300	1	2.10E-07	5000 (e)	9.1	0.0018	4.3	0.00086	1.3	0.00026	0.6	0.00013	0.0748	0.000015

a: Assumes that Chromium is in a trivalent form

b: Assumes that Zinc is in the oxide form and that it is a dust

c: Action level for Lead is OSHA PEL-8 hour TWA

d: Action level for Chromium is OSHA PEL-8 hour TWA

e: Action level for Zinc is OSHA PEL-8 hour TWA

TABLE B-3
ESTIMATED DISCHARGE POINT EMISSION RATES FOR VARIOUS CHEMICALS

Chemical	Mol Wt.	95% Upper of Soil Gas Concentrations (ppmv)	95% Upper of Emission Concentration (g/m3)	Emission Rate (g/s)
Hydrogen Cyanide	27	3.6E+00	3.9E-03	9.3E-04
Hydrogen Sulfide	34	1.2E+02	1.7E-01	4.0E-02
Toluene	92	5.9E+01	2.2E-01	5.3E-02
Carbon dioxide	44	2.1E+05	3.7E+02	8.8E+01
Benzene	78	6.5E-02	2.1E-04	4.9E-05
Bromomethane	94.95	3.3E-02	1.3E-04	3.0E-05
Carbon Tetrachloride	153.84	3.1E-02	1.9E-04	4.6E-05
Chlorobenzene	112.56	3.2E-02	1.5E-04	3.5E-05
Chloroform	119.38	3.2E-02	1.6E-04	3.8E-05
Methyl chloride	50.49	3.2E-02	6.7E-05	1.6E-05
Methylene chloride	84.94	8.2E-01	2.9E-03	6.8E-04
Tetrachloroethene	165.84	3.8E-02	2.6E-04	6.2E-05
Trichloroethene	131.4	4.0E-02	2.1E-04	5.1E-05
Vinyl chloride	62.5	3.8E-02	9.7E-05	2.3E-05
cis-1,2-Dichloroethene	96.95	3.1E-02	1.2E-04	2.9E-05
m,p-Xylene	106.16	3.6E-02	1.5E-04	3.7E-05
o-Xylene	106.16	3.1E-02	1.4E-04	3.2E-05
Ammonia	17	1.0E+01	7.2E-03	1.7E-03

Flow Rate: 500 cfm
Flow Rate: 0.24 m3/s

Table B-4

Estimated Air Concentrations for Selected Chemicals at Various Distances from Soil Gas Discharge Point

Distance (m) ->				17		50		100		150		600	
Max concentration for unit emission of 1g/sec. (ug/m3) ->				3711		2778		1212		655.7		138.2	
Chemical	Tox. Criteria	Tox. Factor (ppmv)	Tox.Factor (ug/m^3)	Max. Conc.(ug/m^3)	Hazard	Max. Conc.(ug/m^3)	Hazard	Max. Conc.(ug/m^3)	Hazard	Max. Conc.(ug/m^3)	Hazard	Max. Conc.(ug/m^3)	Hazard
Hydrogen Cyanide	ERPG-2	10	1.10E+04	3.47E+00	3.14E-04	2.60E+00	2.35E-04	1.13E+00	1.03E-04	6.13E-01	5.55E-05	1.29E-01	1.17E-05
Hydrogen Sulfide	ERPG-1	0.1	1.39E+02	1.50E+02	1.08E+00	1.12E+02	8.06E-01	4.89E+01	3.52E-01	2.64E+01	1.90E-01	5.57E+00	4.01E-02
Hydrogen Sulfide	Odor	0.0045	6.26E+00	1.50E+02	2.39E+01	1.12E+02	1.79E+01	4.89E+01	7.81E+00	2.64E+01	4.21E+00	5.57E+00	8.91E-01
Toluene	ERPG-1	50	1.88E+05	1.96E+02	1.04E-03	1.47E+02	7.82E-04	6.42E+01	3.41E-04	3.47E+01	1.84E-04	7.31E+00	3.89E-05
Benzene	ERPG-1	50	1.60E+05	1.82E-01	1.14E-06	1.36E-01	8.51E-07	5.94E-02	3.72E-07	3.21E-02	2.01E-07	6.77E-03	4.25E-08
Benzene	TLV-TWA	10	3.19E+04	1.82E-01	5.70E-06	1.36E-01	4.27E-06	5.94E-02	1.86E-06	3.21E-02	1.01E-06	6.77E-03	2.12E-07
Bromomethane	TLV-TWA	1	3.88E+03	1.13E-01	2.91E-05	8.47E-02	2.18E-05	3.69E-02	9.51E-06	2.00E-02	5.15E-06	4.21E-03	1.08E-06
Carbon Tetrachloride	ERPG-1	20	1.26E+05	1.71E-01	1.36E-06	1.28E-01	1.01E-06	5.57E-02	4.43E-07	3.01E-02	2.39E-07	6.35E-03	5.05E-08
Carbon Tetrachloride	TLV-TWA	5	3.15E+04	1.71E-01	5.42E-06	1.28E-01	4.06E-06	5.57E-02	1.77E-06	3.01E-02	9.58E-07	6.35E-03	2.02E-07
Chlorobenzene	Odor(d)	1.3	5.98E+03	1.29E-01	2.15E-05	9.63E-02	1.61E-05	4.20E-02	7.02E-06	2.27E-02	3.80E-06	4.79E-03	8.00E-07
Chloroform	TLV-TWA	10	4.88E+04	1.40E-01	2.86E-06	1.05E-01	2.14E-06	4.56E-02	9.35E-07	2.47E-02	5.06E-07	5.20E-03	1.07E-07
Methyl chloride	ERPG-2	400	8.26E+05	5.90E-02	7.15E-08	4.42E-02	5.35E-08	1.93E-02	2.33E-08	1.04E-02	1.26E-08	2.20E-03	2.66E-09
Methyl chloride	TLV-TWA	50	1.03E+05	5.90E-02	5.72E-07	4.42E-02	4.28E-07	1.93E-02	1.87E-07	1.04E-02	1.01E-07	2.20E-03	2.13E-08
Methylene chloride	ERPG-1	200	6.95E+05	2.52E+00	3.63E-06	1.89E+00	2.72E-06	8.24E-01	1.19E-06	4.46E-01	6.41E-07	9.39E-02	1.35E-07
Methylene chloride	TLV-TWA	100	3.47E+05	2.52E+00	7.26E-06	1.89E+00	5.43E-06	8.24E-01	2.37E-06	4.46E-01	1.28E-06	9.39E-02	2.70E-07
Tetrachloroethene	Odor(d)	47	3.19E+05	2.29E-01	7.19E-07	1.72E-01	5.38E-07	7.48E-02	2.35E-07	4.05E-02	1.27E-07	8.53E-03	2.68E-08
Trichloroethene	TLV-TWa	50	2.69E+05	1.88E-01	6.99E-07	1.41E-01	5.23E-07	6.13E-02	2.28E-07	3.32E-02	1.23E-07	6.99E-03	2.60E-08
Vinyl chloride	TLV-TWA	5	1.28E+04	8.58E-02	6.71E-06	6.42E-02	5.02E-06	2.80E-02	2.19E-06	1.52E-02	1.19E-06	3.20E-03	2.50E-07
cis-1,2-Dichloroethene	TLV-TWA	200	7.93E+05	1.08E-01	1.36E-07	8.10E-02	1.02E-07	3.53E-02	4.45E-08	1.91E-02	2.41E-08	4.03E-03	5.08E-09
m,p-Xylene	Odor(d)	0.62	2.69E+03	1.36E-01	5.06E-05	1.02E-01	3.79E-05	4.45E-02	1.65E-05	2.41E-02	8.94E-06	5.07E-03	1.88E-06
o-Xylene	Odor(d)	5.4	2.34E+04	1.19E-01	5.09E-06	8.94E-02	3.81E-06	3.90E-02	1.66E-06	2.11E-02	9.00E-07	4.45E-03	1.90E-07
Ammonia	ERPG-1	25	1.74E+04	6.37E+00	3.67E-04	4.77E+00	2.74E-04	2.08E+00	1.20E-04	1.13E+00	6.48E-05	2.37E-01	1.36E-05
Ammonia	Odor(d)	17	1.18E+04	6.37E+00	5.39E-04	4.77E+00	4.03E-04	2.08E+00	1.76E-04	1.13E+00	9.52E-05	2.37E-01	2.01E-05

Odor(d): Geometric Mean Odor Threshold (detection)

TLV-TWA: Threshold Limit Values-Time Weighted Average