DAUB & ASSOCIATES, INC.

1985 ½ SOUTH BROADWAY
GRAND JUNCTION, CO 81507-9649
(970) 254-1224
FAX (970) 242-8438
email: gjdaub@daubandassociates.com
www.daubandassociates.com

NATURAL SODA

2010 Mine Plan
Volume 4, Section 7.0
Processing Facilities

Prepared for:

Natural Soda, Inc.

Piceance Creek Basin
Rio Blanco County, Colorado

Prepared by:

Daub & Associates, Inc.
Grand Junction, Colorado

TABLE OF CONTENTS

7.1. Introduction 7-1
7.2. Location 7-1
7.3. Plant Capacity 7-3
7.4. Phase 1 Construction Scope 7-3
7.4.1. Plant Facility 7-3
7.4.2. Utilities 7-3
7.4.3. Process Operations 7-4
7.4.4. Site Security (fencing) 7-5
7.4.5. Wells 7-5
7.5. Phase 1 Plant Facilities 7-5
7.5.1. Buildings 7-5
7.5.2. Process Control 7-6
7.5.3. Site Fencing 7-6
7.6. Utilities 7-6
7.6.1. Electrical Power Distribution 7-6
7.6.2. Fuel Storage and Distribution 7-7
7.6.3. Communication 7-7
7.6.4. Raw Water Supply and Storage 7-7
7.6.5. Process Water Treatment and Storage 7-8
7.6.6. Hot Water / Steam Generation and Distribution 7-8
7.6.7. Cooling Water System 7-8
7.6.8. Plant Air Systems 7-9
7.6.9. Potable Water Supply 7-9
7.6.10. Domestic Sewage Disposal System 7-9
7.6.11. Fire Protection 7-9
7.7. General Process Description 7-10
7.7.1. Mining Operations 7-10
7.7.2. Pregnant Liquor Storage 7-12

7.7.3. Crystallization 7-12
7.7.4. Dewatering 7-12
7.7.5. Drying 7-13
7.7.6. Storage 7-13
7.7.7. Bagging Facility 7-14
7.7.8. Loading Station 7-14
7.7.9. Evaporation Pond 7-14
7.7.10. Wash Water System 7-15
7.8. General Processing Effects and Control Plans 7-15
7.8.1. Air Pollutant Emissions 7-15
7.8.2. Water Discharge 7-15
7.9. Health and Safety 7-16
7.9.1. Objectives 7-16
7.9.2. Fire Prevention and Emergency Procedures 7-17
7.9.3. Safety 7-18
7.9.4. Potential Hazardous Gases 7-20
7.10. Phase 2 Mine Expansion 7-21
7.10.1. Introduction 7-21
7.10.2. Resource Evaluation 7-21
7.10.3. Facility Expansion 7-24
7.10.4. Processing Upgrades and Expansion 7-24
7.10.5. Air Pollutant Emissions (Phase 2) 7-25

LIST OF FIGURES

Figure 7-1. Natural Soda, Inc. Sodium Lease Area Map. 7-2

Figure 7-2. Generalized Process Flow Diagram 7-11

Figure 7-3. Phase 2 Plant Expansion Drawing 7-22

Figure 7-4. Upper Boies Bed Saline Facies Map. 7-23

LIST OF TABLES

Table 7-1 Permitted Annual Emissions 7-26

7.0 PROCESSING FACILITIES

7.1. Introduction

Natural Soda, Inc. (NSI) operates a sodium bicarbonate (bicarb) production facility on four federal sodium lease tracts within the Piceance Basin in northwestern Colorado. Figure 7-1, illustrates locations of current area of operations (section 26 detail), leases, wells and access roads. Sodium bicarbonate is produced by solution mining underground nahcolite deposits and then recovering the sodium bicarbonate in a surface processing and refining facility. The sodium bicarbonate produced is currently available in several grades, meeting ISO 9001, U.S. Pharmacopeia (USP), American Institute of Baking (AIB) and other standards. Food, animal feed, industrial and specialty markets are currently supplied by NSI. Among some of the many uses of sodium bicarbonate produced by NSI are water treatment, animal feed, fire extinguishers and the treatment of flue gases to remove oxides of sulfur and nitrogen.

7.2. Location

The project site is located in Rio Blanco County, approximately 42 miles southwest of Meeker, Colorado, at an elevation of 6600 ft. Nearby small communities include, Meeker, Rangely and Rifle. Grand Junction, the nearest major population center, is about 120 miles from the site. Paved roads provide access to the site.

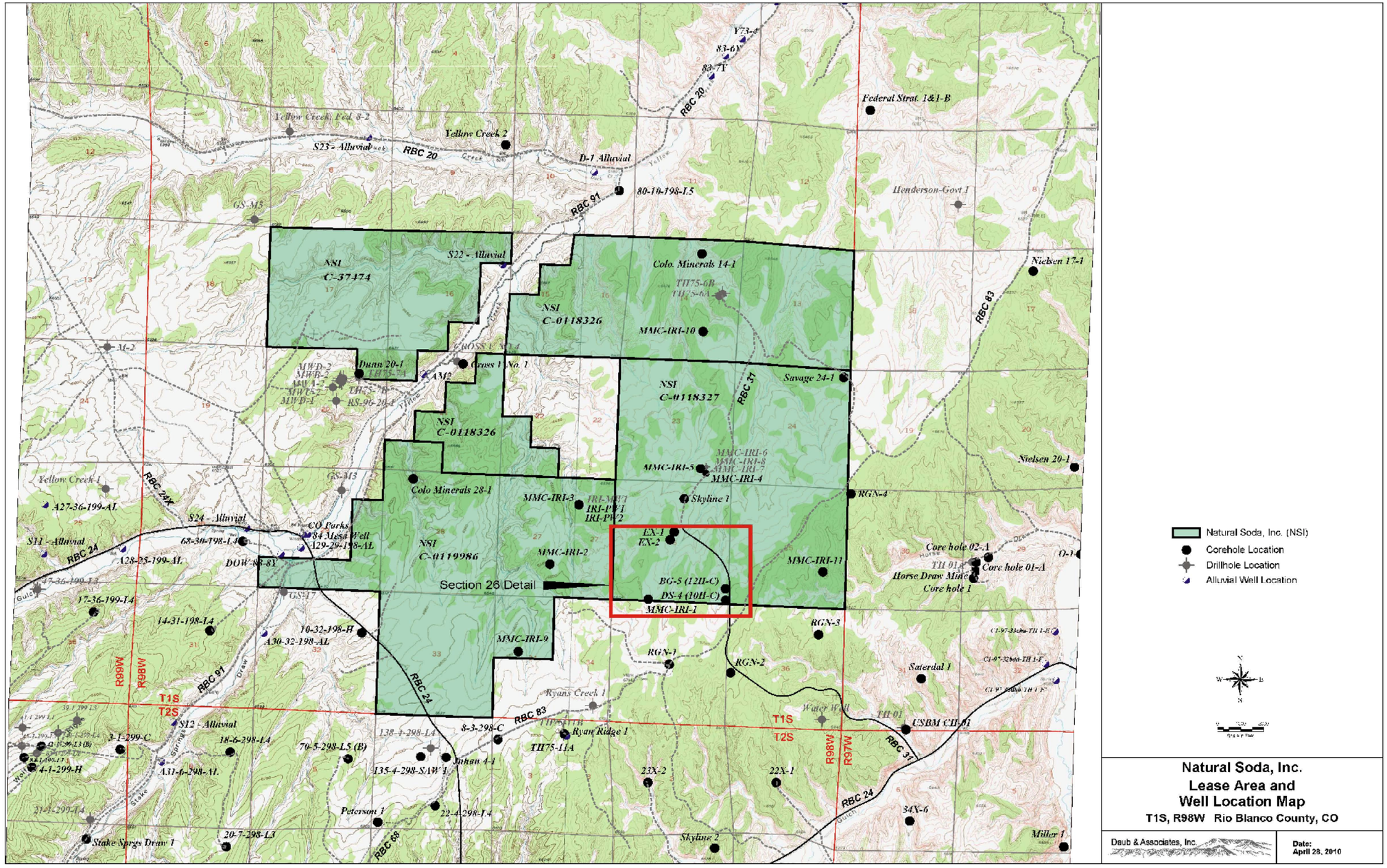

Figure 7-1. Natural Soda, Inc. Sodium Lease Area Map.

7.3. Plant Capacity

The BLM's 1987 Environmental Impact Statement studied the environmental and socioeconomic effects of four potential plant capacities; no action (0 tons per year (TPY)), 50,000 TPY, 125,000 TPY and 500,000 TPY of sodium bicarbonate (bicarb). Over the long term, plant was to be constructed and expanded in phases or modules with each module representing a production increase of 125,000 TPY. Phase I (125,000 TPY production capacity) construction was completed in January, 1991. The anticipated completion of Phase 2 plant expansion (to 250,000 TPY production capability) is 2012.

7.4. Phase 1 Construction Scope

The phase 1 project scope called for the construction of all surface production and support facilities resulting in a processing facility capable of producing 125,000 TPY of bicarb. Specifically included were:

7.4.1. Plant Facility

The plant facility was designed and built to house:

- Process equipment
- Packing, palletizer, warehouse, storage, loadout
- Services (maintenance, utilities, lab, etc.)
- Administration offices

7.4.2. Utilities

The following utilities were installed during phase 1 construction:

- Electrical supply line and distribution
- Natural gas supply line and distribution
- Telephone lines
- Raw water well, pipeline and storage
- Process water treatment and distribution
- Hot water heating and distribution
- Cooling water system
- Low pressure steam generation
- Plant and instrument air systems
- Domestic Sewage System

7.4.3. Process Operations

Phase 1 construction included the following process elements:

- Liquor storage and handling
- Cooling/Crystallization
- Dewatering, Drying, Granulation
- Storage, Loadout
- Evaporation Pond (3 acre process pond and 7 acre waste pond, 10 acres total)
- Wash Water System

7.4.4. Site Security (fencing)

- Process area
- Evaporation pond
- Drill pads and topsoil stockpiles
- Mud Pits

7.4.5. Wells

- Water Supply
- Monitoring
- Production

7.5. Phase 1 Plant Facilities

7.5.1. Buildings

Administration, process, utilities, maintenance, bagging warehousing and lab facilities are housed in a 120' x 220' pre-engineered metal building. Small, pre-fabricated frame outbuildings house water well electrical equipment, lubricants storage and the fire pump. The product storage building is a 100' diameter pre-engineered concrete and wood frame structure.

All permanent buildings and the tank farm area are on concrete. Floor drains and/or sumps collect any spillage which is routed to an approximately three acre process pond section for containment. Small quantities of stored hazardous materials, such as petroleum products, are contained within their storage area.

7.5.2. Process Control

The mining, processing, and utilities operations utilize a computer based distributed control system. The system handles all closed loop control, monitoring and alarming of process variables. The system also provides trend and reporting capabilities for both control and accounting purposes.

Process monitoring and control is from the central control room. Each of two operator stations is capable of performing all necessary interfacing between the control system and the operator(s). The operator interface includes complex alarming, trending, analog and discrete monitoring, setpoint adjustment of control loops, as well as the capability to start and stop motors. System printers are utilized for generated reports and for alarm documentation, etc.

7.5.3. Site Fencing

An eight foot high woven wire fence has been constructed around the approximately eight acre evaporation pond to limit animal access. A four strand barbed wire fence (conforming to BLM Type D specifications) was constructed around the facilities topsoil embankment and around the plant facilities.

7.6. Utilities

The following subsections provide detail for the various utility and process elements that were added during phase 1 construction. Specific upgrades or changes to these elements will be addressed in the Phase 2 Mine Expansion section.

7.6.1. Electrical Power Distribution

Power is supplied to the site by White River Electric Association from the east near the Horse Draw drainage. The right-of-way was secured and will be maintained by White River Electric Association.

7.6.2. Fuel Storage and Distribution

A natural gas line has been provided for the on-site distribution network for all site heating requirements.

The natural gas is supplied by a 4" line approximately 2.5 miles in length. The BLM right-of-way was issued to NSI and the line is connected to the Questar pipeline system.

The high pressure natural gas is reduced to 40 psig for in-plant distribution. Gas is distributed to the boilers, flash dryers and direct fired equipment.

A diesel storage tank is provided in the fire water pump house to supply fuel for the diesel fire water pump.

7.6.3. Communication

Telephone lines were installed from mile 7 of Ryan Gulch road (County Road 24), along Yellow Creek Jeep Trail (County Road 83) to NSI's original access road and on to the mine site. The right-of-way is assigned to NSI.

7.6.4. Raw Water Supply and Storage

Raw water for mining and process operations is supplied from well 90-1 located south of the plant site. A buried 6" pipeline is installed from the well to a 100,000 gallon tank, which serves as a raw water storage section (70,000 gallons) and dedicated fire water storage section (30,000) gallons. Electric power supply was constructed to the well site. Additional backup raw water supply wells are being considered.

7.6.5. Process Water Treatment and Storage

All water used directly in the mining, crystallization and surface cooling operations must be treated to remove hardness. The raw water is softened in a water softener unit to remove calcium and magnesium ions. The softener includes a common brine tank to regenerate the resin beds.

Softener regeneration wastes drain to the waste water pond. To minimize the water load on the waste pond, softener production is minimized.

The softened water is stored in a 72,000 gal carbon steel tank located in the process tank farm. A 100 gpm process water pump distributes process water to the plant users.

7.6.6. Hot Water / Steam Generation and Distribution

Low pressure steam boilers provide process heating. Principle uses include heating barren liquor (≤250 degrees F) and wash water (≤200 degrees F).

Curbs and floor drains are provided around the heaters and pumps to contain any spills. Floor drains are routed to the waste pond.

7.6.7. Cooling Water System

A cooling tower and distribution system was constructed for process cooling requirements. Principle use is to cool the heat exchangers feeding crystallizer No. 4.

The cooling tower constructed during Phase I handles about 1,200 gpm of cooling water with a design inlet of approximately 90°F. Cooling tower additions are planned for Phase 2 plant expansion, see below.

A system is provided to chemically treat the cooling water to prevent scaling and/or bacteria growth in the cooling water system. The cooling water blowdown system drains to the waste pond.

7.6.8. Plant Air Systems

Plant and instrument air is supplied by a screw compressor furnishing oil free air at 125 psig output.

The instrument air loop includes an air dryer and is distributed at 100 psig. In addition to meeting the instrument requirements, the dried instrument air system serves the dust collectors with bag cleaning air. Plant air serves the maintenance shops and plant utility stations.

7.6.9. Potable Water Supply

Bottled drinking water is supplied from off-site. Process water (softened) is supplied to showers, toilets, sinks, safety showers and other services normally considered "potable". Plumbing for these systems is such that a potable water treatment system can be added at a later date.

7.6.10. Domestic Sewage Disposal System

The criteria for design of the sewage disposal system were based on Colorado Department of Health guidelines. A total of 35 to 45 personnel (office/plant) are expected to be employed. A Rio Blanco County permit was obtained for the sewage disposal system.

7.6.11. Fire Protection

The fire protection system consists of a diesel powered fire pump and a loop underground piping system with fire hydrants and hose houses. The building is equipped with fire extinguishers as required by fire code. The bottom 1/3 (30,000 gallons) of the raw water storage tank is reserved for fire protection.

A jockey pump is installed to maintain pressure on the fire loop. The fire loop consists of a buried 8" HDPE pipe (FM approved) with fire hydrants spacing at 250

feet apart. Fire hose boxes are installed near three of the fire hydrants. A sprinkler system provides fire protection for the bagging warehouse area where wood and paper products are stored.

7.7. General Process Description

7.7.1. Mining Operations

Mining operations deliver a saturated solution of sodium bicarbonate in water (pregnant liquor) at temperatures ranging up to 250°F. Figure 7-2 illustrates a generalized process flow. Production rates can be controlled by varying brine temperature and/or flow rate, and process cooling.

Surface operations return preheated barren liquor for reinjection. The solution mining operation is a net consumer of water as saturated solution fills the cavity created by the dissolution of nahcolite. This increment of water will be added in the process operations. For a production rate of 125,000 TPY, the water makeup rate for the mine is estimated at 15,221 lbs/hr or 30.4 gallons per minute (gpm). This is to make up for cavity growth only and assumes no other mine or system losses. Makeup rate is linear with production rate, that is, a production rate of 250,000 TPY would assume a makeup rate of 60.8 gpm or 30,442 lbs/hr. Additional water make-up is required at the plant for process operations including evaporation in the cooling towers, product drying, utilities, and drilling needs. The cooling tower water usage is dependent upon heat load to the plant, but the towers create potentially the largest water demand. In the 250K ton per year production scenario, the tower usage could range as high as 70 gpm.

Flow meters, temperature and pressure sensing devices are provided on the injection (barren liquor) lines and the recovery (pregnant liquor) lines. A final flow meter is located in the pregnant stream at the plant. These devices provide information for control of the operation and for accounting purposes.

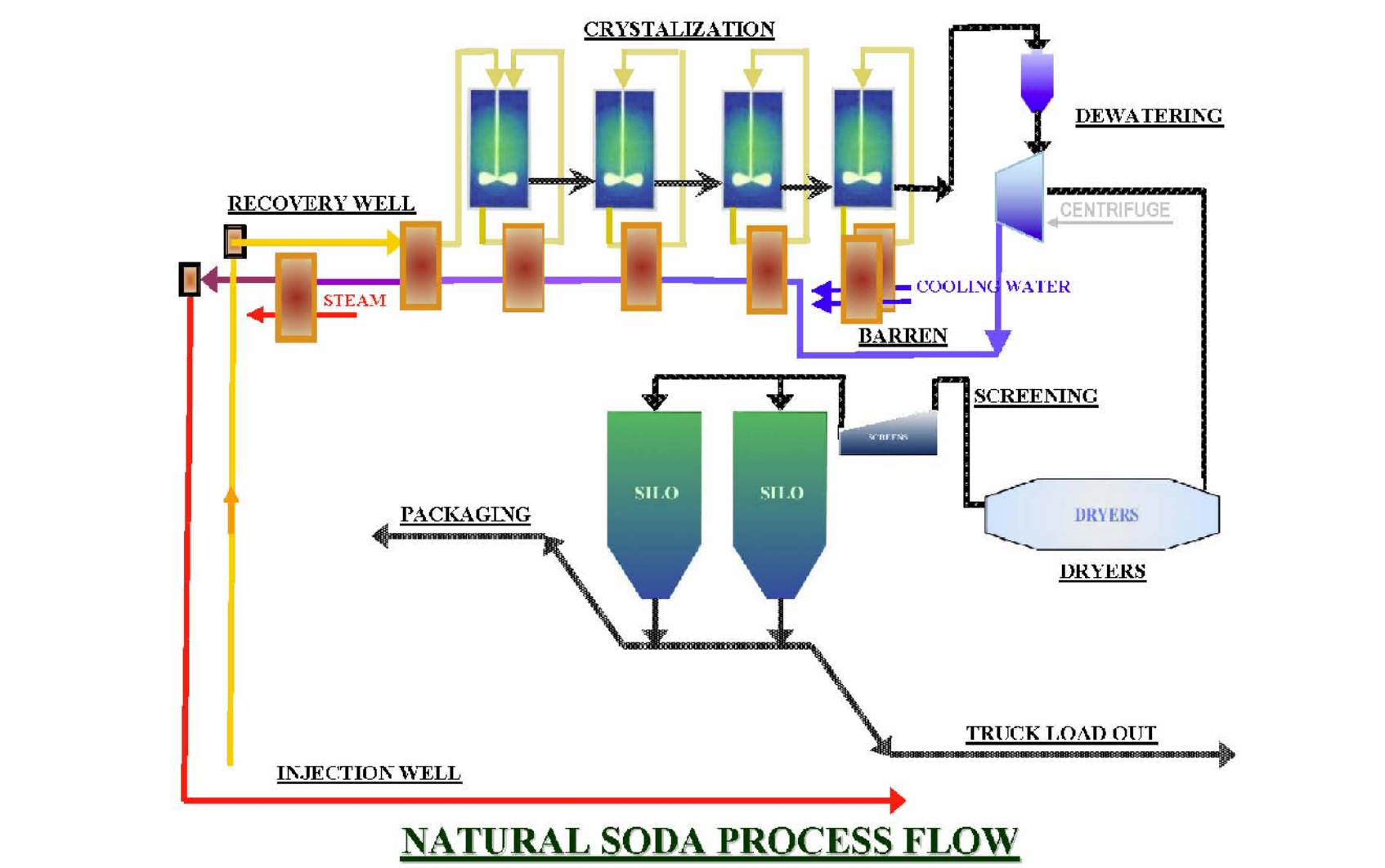

Figure 7-2. Generalized Process Flow Diagram

7.7.2. Pregnant Liquor Storage

Pregnant Liquor is delivered from the mine to a 42,000 gal. storage tank at the plant site. The storage tank is insulated for energy conservation and to prevent cooling and premature crystallization of bicarb.

7.7.3. Crystallization

Sodium bicarbonate is precipitated by cooling the pregnant liquor. Cooling and crystallization is accomplished in four stages in series. The crystallizers, in the original product train, are flat bottom vessels with mechanical agitators. Cone bottom crystallizers have been specified for the second, high grade product train.

The crystallizer feed streams are cooled using external plate and frame type heat exchangers. Feeds to crystallizers No's 1, 2, and 3 are cooled by counter current flow of the barren liquor. Crystallizer No. 4 feed is cooled with cooling tower water. Barren liquor can also be heated in an external tube and shell heat exchanger. Hot barren liquor is delivered to mining operations for reinjection.

The 36,000 gallon barren liquor tank provides some surge capability. The tank is covered and insulated for energy conservation.

A recycle line back to the tank provides for maintaining temperature during an extended shut down.

A food grade additive is utilized at low concentration (less than 20 ppm) in the crystallizer circuit to promote improved crystal habit.

7.7.4. Dewatering

The total sodium bicarbonate production from the crystallizers is slurried to a set of 6 inch Hydroclones for thickening. The underflow from these Hydroclones is fed to the centrifuge to dewater further before the product is fed to the product dryers. Filtrate

from the dewatering operation is channeled, through a bank of 4 inch hydroclones for final product capture, before returning to the crystallizer area where this now barren stream is used to cool the crystallizer feed streams. This stream is collected in the barren liquor tank for reinjection in the mine. Anti-foamant is utilized in the barren liquor stream to control foaming.

7.7.5. Drying

Wet cake from the dewatering operation is dried in natural gas fueled, direct fired flash dryers. The wet cake is first mixed with recycled dry product to enhance flow and handling characteristics and minimize caking and plugging problems in the dryer feed system. Dry product is recovered by means of a cyclone and baghouse. Baghouse fines are recombined with the main product stream.

7.7.6. Storage

Product from the cyclone is transferred to the dome storage building or screening operation. The dome storage building has' a nominal capacity of 500 tons of finished product. The screening operation provides capability to classify the product by size and product use. An air classifier is utilized to separate the product by size prior to conveyance to screens (6). Product is transported from screens by screw conveyors to any of the five bins (4-240 and 1-120 ton capacity) or to the storage dome. Product from the bins is conveyed by screw conveyors and elevators through a scalping screen and magnets to the bagging facilities or bulk loadout. Scales on the conveyance streams (to dome storage and bin system) are included for production accounting.

A reclaim conveyor is constructed in the floor of the dome storage building for loading out product. A front end loader may be used to feed the reclaim conveyor. Dust collection equipment is included on the conveyor transfer points and in the dome storage building.

7.7.7. Bagging Facility

The bagging facility has three packers for production of 50 lb. bags. The packers are each rated at 16 tons/hour. A palletizer rated at 32 tons/hour, is utilized to package the 50 lb. sacks for shipment by truck. Additionally, the product can be packaged in "super sacks" of generally one ton capacity.

7.7.8. Loading Station

Product is shipped from the site in bulk transport trucks or bagged and shipped by tractor/van units. Loading from the bulk storage building is done by mechanical conveyors. The 110 foot truck scale is included in the loading station for control of operations and final accounting. Bagged product is stored in the bagging warehouse and loaded by forklift. Dust collection systems are provided for the conveyors and the truck load-out area.

7.7.9. Evaporation Pond

An evaporation pond had been provided for containment of process water and disposal of waste streams. The pond consists of two compartments of approximate three and seven acres. The smaller compartment is provided to contain plant spills or excess process solution overflow. The solutions collected in this compartment will be pumped back (150 gpm submersible pump) to the plant for recycling. The larger compartment contains utility waste streams such as cooling tower blow down, boiler blow down, and water softener regeneration purge. In the past, drainage from the glycol heater containment was directed to this pond, but these heaters were replaced by boilers in 2002. The pond has a double liner with a leak detection system. The primary liner (top) is 60 mil. high density polyethylene (HDPE). The secondary liner is 40 mil. HDPE. Drainage netting was used between the two liners to assist flow of potential leakage from the primary liner to a sump between the liner where it will be recycled and limit potential leakage through the 40 mil liner. The lined earthen dike separating the two compartments is three feet lower than the

perimeter dike of the pond. The pond is a maximum depth of ten feet (not including three feet for freeboard). A wash water line is provided at the process waste compartment for wash down and cleanup.

7.7.10. Wash Water System

A wash water tank, heater and distribution system was provided to permit washing liquor and slurry handling equipment, and for general area cleanup. The wash water system uses process water for makeup.

7.8. General Processing Effects and Control Plans

7.8.1. Air Pollutant Emissions

Throughout Phase 1 plant operations, NSI was classified by the Colorado Department of Public Health and Environment as a minor emitter. Phase 2 plant expansion and upgrades will reduce plant emissions, specifically oxides of nitrogen (NOx), while increasing production. Refer to the Phase 2 Mine Expansion subsection for post expansion emission commentary.

7.8.2. Water Discharge

The nahcolite solution mine has been designed as a zero discharge facility in regard to wastewater. Water produced during drilling is conveyed via truck to a retention pond and no discharge is anticipated. NSI files annual stormwater reports pursuant to permit No. COR34-0751.

Disturbed areas associated with access roads, well field and plant site are reclaimed as soon as practical following construction. Erosion control measures, such as contour furrowing and water bars, are utilized to minimize erosion until such time that a vegetative cover is established.

The product handling and load-out areas has been paved with asphalt or concrete and sloped to prevent precipitation runoff from these areas. Since a potential exists for precipitation falling on these areas to become contaminated with sodium bicarbonate, this water is directed to containment structures and subsequently removed to the evaporation ponds for disposal. Surface runoff is regulated by NSI's Storm Water Discharge Permit.

7.9. Health and Safety

7.9.1. Objectives

The overall objective of the NSI health and safety plan is to reduce injuries and illnesses to the minimum level practicable for employees, contractors and the on-site public. This is accomplished in part through the following means:

- Proper design of facilities and equipment.
- Design and implementation of safe operating procedures.
- Training programs.
- Use of protective equipment.
- Physical isolation of hazards or engineering controls.
- Hazard analysis to identify hazards at each phase of the project and to determine the effectiveness of mitigating measures and quantify remaining risks, if any.
- Compliance with all applicable laws and regulations (OSHA), including work rules issued by NSI.
- Regular monitoring of all on-site activities by trained personnel to ascertain effectiveness of the plan and recommend any necessary changes.

Specific manuals, training programs, and research programs are developed as the project proceeds.

7.9.2. Fire Prevention and Emergency Procedures

Although the product at NSI's nahcolite solution plant is not a flammable hazard, fire remains a serious consideration for all employees. Fire prevention consists of controlling the supply of flammable and combustible materials as well as any possible sources of ignition.

a. The dry terrain surrounding the nahcolite plant is a potential source of combustion and caution must be used in extinguishing smoking materials at the plant and in route. Smoking materials should be disposed of in appropriate containers.

b. Oil, flammable liquids and grease shall be kept in containers provided for them. The containers must be labeled as to their contents.

c. Fire extinguishers are conveniently located throughout the plant and office building for accessibility and rapid attack on a fire. Clear access to fire extinguishers will be maintained. Portable, dry chemical extinguishers with A, B and C ratings are utilized and work for most types of fire. This is the most common extinguisher throughout the plant site. At a minimum, these fire extinguishers are checked annually for condition and charge. Surrounding the plant are fire hydrants. Water extinguishment works well for most solid flammable fuels, such as structure fires, and for cooling structures during brush fires, but should not be used on an electrical fire. Halon extinguishers are available in instrumentation and electrical areas.

The first concern during a fire is the safety of the employees and others on site. If a fire starts there are at least two options, depending on the size of a fire:

a. The fire may be controlled with a fire extinguisher, of if necessary, the fire pump system from hydrants.

b. If the fire is large enough that the fire extinguisher or the fire pump system is inadequate, the employees and any other persons will leave the area and initiate a fire response team from Meeker immediately. Information regarding the facility's name, the location of the fire, and the type of fire will need to be provided to the first responders. If necessary, locate and evacuate all other persons from potentially dangerous situations.

7.9.3. Safety

- The health and safety of all employees, contractors and visitors is NSI's, as well as each employee's and contractor's, responsibility. NSI's goal is the safe production of nahcolite; safety is an integral part of every job.

- Safety will not be subordinated to demands for production, cost savings, product quality, schedules, convenience or expediency.

- Every employee has the responsibility to perform their job in a safe manner, to ensure their own safety and the safety of their co-workers.

- It is NSI's policy to maintain safe working conditions. Work places shall be free of recognized safety hazards. NSI will comply fully with all state and federal laws and regulations pertaining to the safety and health of its employees. All employees will receive necessary training in safe procedures and safety regulations.

- Employees will be held accountable for the safe performance of their duties, and will be measured on their accomplishments in controlling accidents and losses. Disregard for safety will be regarded as a very serious matter.

- NSI recognizes its responsibility to manage activities in a manner that assures a safe and healthy operation. NSI will continue in its endeavors to develop better methods to attain the safest and healthiest environment possible.

- Conditions may be particularly hazardous for those who are not familiar with the equipment and operating procedures at the NSI site. The thrust of the safety program is to (1) exclude people from potentially dangerous areas, and (2) protect authorized personnel that must enter hazardous areas.

- Exclusion is accomplished by signs, physical barriers, and security practices. Warning signs are posted in hazardous areas; and when potential for accidents is greatest, physical barriers such as solid enclosures or fences will be used. The process area will be fenced as will hazardous areas such as evaporation ponds. Security practices include measures taken by employees to assure that hazardous areas remain inaccessible to the public.

- Contractors, inspectors, and other visitors that must access hazardous areas will be given proper safety equipment and instruction. In all cases, such visitors will be accompanied by a NSI employee.

7.9.4. Potential Hazardous Gases

Under unusual circumstances, three (3) gases may be encountered during operations at the nahcolite solution plant:

Carbon Monoxide . . . CO

Methane CH4

Hydrogen Sulfide . . . H2S

Carbon monoxide (CO) would be present in the event of a fire. It is colorless, odorless and tasteless. Like hydrogen sulfide, carbon monoxide is highly toxic. It is classified as a chemical asphyxiant.

Methane (CH_4) would be the most common of the flammable gases encountered on site. Methane pockets exist underground in the Piceance Basin per historical geologic records. Ventilation in the plant is such that an accumulation of methane would not occur. Well drilling into an underground methane pocket could produce an ignition if the range of oxygen (5 - 15% volume) is such to form the flammable, explosive mixture. Methane reduces the oxygen concentration when mixed with air, thus acting as an asphyxiant. Methane induced flames can produce carbon monoxide.

Historical records also indicated potential for hydrogen sulfide in the Piceance Basin. Because of this potential, NSI monitors for this gas as part of any vessel entry permit procedure. The highest concentration ever detected has been 2 PPM in the fire pump shack which is tied to the Raw Water Tank.

Monitoring of oxygen, hydrogen sulfide, methane and other explosive gases is done on a regular basis and before and/or during any operations in which gases may be encountered at the nahcolite solution plant or at the well sites.

7.10.3. Facility Expansion

The proposed plant expansion, housing the new production line, will include a new process building. The size of the addition will be 105 by 103 feet for a plant footprint increase of approximately 10,815 square feet. The new boiler building dimensions are anticipated to be 46.5 by 34.5 feet, resulting in approximately 1,604 square feet of floor space. The post expansion tank farm area will occupy an area of 46.5 by 33.5 feet resulting in a footprint of 1,558 square feet. Upgraded product storage will be achieved with a new 50 ton capacity USP product silo and 350 ton capacity industrial/feed product silo. Plant expansion will result minimal, if any, additional disturbed area.

7.10.4. Processing Upgrades and Expansion

Much of NSI's plant expansion will focus on the construction of an additional production line. This new processing line will assume the production of and increase the production capacity of NSI's USP and higher grade products, with the addition of a new hemodialysis grade product as the highest grade. Processing upgrades and expansion include:

- Add a 4 stage crystallizer system with heat exchangers and a pusher centrifuge.
- Construct an additional 18MMBtu/hr, single cell, counterflow cooling tower.
- Add a third flash dryer and baghouse.
- Add a new screening area dust collector.
- Supplement process tanks.
- Assign the two current Cleaver-Brooks boilers to back-up status and replace with a new, increased capacity, low NOx emission design, Cleaver-Brooks boiler.

The new low NOx boiler has the capability to increase production while simultaneously decreasing NOx emissions by more than 50 percent.

- Construct additional storage / load-out silos for USP and industrial/animal feed products.

7.10.5. Air Pollutant Emissions (Phase 2)

Air pollution emission sources include: a natural gas-fired boiler and flash dryers, flash dryer and air classifier baghouses, and dust collectors. Recognized fugitive dust sources include: vehicle traffic, product conveyance, well drilling equipment and wind blown dust from disturbed land areas.

The access road is paved, to limit vehicle dust emissions. Disturbed areas are stabilized as soon as possible. Processing facilities utilize baghouses, filters and dust collectors to limit emissions. Natural gas is used to heat injected water and is a relatively clean burning fuel. Additionally NSI's replacement boiler, with a heating capacity approximately one third larger than the two boilers that it is replacing, is anticipated to produce approximately 50% less oxides of nitrogen (NOx). This boiler emission reduction is possible through the use of a low-NOx burner and flue gas recirculation (FGR). Air Pollution Emission Notices (APEN) submitted by NSI will be approved by the Colorado Department of Public Health and Environment (CDPHE) prior to startup. Natural Soda Inc. will continue to operate within the historic emission levels as approved by the CDPHE and continues to be classified as a Minor Emitter.

2010 APEN Submission								
Source Name	**Permit Number**	**Post Expansion Requested Annual Permitted Emissions Through 2015 (TPY)**						**Total of all Permitted Emissions per Source (TPY, PM10 backed out due to inclusion with TSP)**
		TSP	**PM10**	**SOx**	**Nox**	**VOC**	**CO**	
Nahcolite Mining	86RB140-2F	9.710	6.130	na	na	na	na	**9.710**
Boiler, Main, Low Nox	tbd	3.060	3.060	0.680	14.230	2.260	14.720	**34.950**
Boiler, Backup, No. 1	02RB0560	0.059	0.059	0.005	0.781	0.043	0.656	**1.544**
Boiler, Backup, No. 2	02RB0561	0.059	0.059	0.005	0.781	0.043	0.656	**1.544**
Flash Dryer, Niro	tbd	9.570	9.570	0.016	2.650	0.146	2.230	**14.612**
Flash Dryers, Raymond (2)	86RB140-9	8.500	8.500	0.017	2.800	0.152	2.327	**13.796**
Air Classifier, SD-20	98RB0843	11.670	11.670	na	na	na	na	**11.670**
Dust Collector, Screening Area	tbd	0.210	0.210	na	na	na	na	**0.210**
	TSP Total	**42.838**						**88.036**
	subtract PM10	39.258						Cross Sum Check
Requested Annual Permitted Emission Totals (per Emission Type, TPY)	**TSP with PM10 values backed out**	**3.580**	**39.258**	**0.723**	**21.242**	**2.644**	**20.589**	**88.036**

Table 7-1 Permitted Annual Emissions