

327. Petitioner did not do any contaminants testing to examine whether contamination from the industrial development has reached the National Park.

328. The soluble constituents of petroleum could pose a contamination problem.

POLLUTION PREVENTION PLAN

329. Implementation of Petitioner's PPP would result in adverse impacts to the surface and ground water resources in the Petition Area and in the adjacent National Park.

330. Fresh groundwater flows from inland and mountainous areas towards the coast, or mauka to makai.

331. Groundwater in Hawaii is recharged from rainfall and other inputs both locally and from higher elevations.

332. Surface waters, that is waters that runoff over the land, tend to go into the ground and reach the groundwater because of the high permeability of the ground. Surface waters include rainfall and other waters such as washdown and irrigation. The volcanic rocks from south of the Petition Area to Keahole point are highly permeable. This high infiltration capacity means that any surface water will readily infiltrate the ground surface and move down into groundwater.

333. Because rainfall in the vicinity of the National Park is low, the main source

of groundwater in the National Park originates from inland areas east or mauka of the National Park.

334. In the National Park, groundwater flows at approximately 55 feet below the surface of the ground at the mauka border and gradually rises closer and closer to the surface as it flows toward the coast. The water in the fishponds and in the anchialine pools is essentially groundwater exposed at the surface.

335. Groundwater originating from the Petition Area reaches the National Park and is fed into the anchialine ponds, Aimakapa Pond, Koloko Pond, and the coastal waters via springs and other seeps.

336. Because of the nature of lava flows and fractures, the actual flow routes of the groundwater between the Petition Area and the National Park are not known. There may be lava tubes and other preferred paths of groundwater flow that increase flow from the Petition Area to the National Park.

337. Essentially all the resource impact from the proposed development will manifest in the groundwater. Groundwater plays an important role in maintaining the ecosystem of the anchialine ponds within and outside the National Park.

338. Groundwater is vulnerable to impacts associated with industrial development and uses, such as the release of petroleum products, solvents, and other toxic chemicals into the groundwater, the disposal of nutrient-rich wastewater,

irrigation and washwater into the groundwater, contaminated stormwater runoff, and the removal of groundwater for drinking water supply.

339. Contamination of groundwater, increased nutrient load in the groundwater, changes in salinity of groundwater, and changes to groundwater volume alter the natural ecosystems in the National Park. The myriad of potential impacts from such changes --ranging from massive bird die-offs from avian botulism to increased population of toxic algae growth in the ponds – remain inadequately assessed and lack sufficient scientific study.

340. Removal of groundwater from inland wells decreases flow into the National Park and increases the salinity of that groundwater. The cumulative development planned *mauka* of the National Park will cause a 7% reduction in groundwater flow through the National Park and increase salinity in that groundwater by 10%.

341. There are no direct data indicating the thickness of the brackish water zone, the lens where the fresh groundwater flows.

342. Salinity impacts to groundwater will be greater with a full build-out of the area because of the significantly increased withdrawals of the freshwater lens.

343. The potential impacts to the groundwater water quality of the National Park are not adequately assessed or mitigated in Petitioner's proposed project.

Scenic Resources

344. The primary public viewpoints of the Petition Area include: (1) mauka views from Queen Kaahumanu Highway; (2) makai views from upper Hina Lani Street in the vicinity of Mamalahoa Highway; (3) southerly views from Hina Lani Street; and (4) mauka views from the Kaloko-Honokohau National Historical Park.

345. There are no significant impacts affecting views or visual resources. The Petition Area lies mauka of an existing industrial development and will have low building profiles. Although there are no significant impacts affecting views or visual resources, due to the elevated topography of the Petition Area, buildings within the proposed development will be visible beyond the existing Kaloko Industrial Park development as viewed from makai areas. Landscaping and architectural design criteria will be developed and implemented for the project to reduce any visual impacts of the proposed development. Architectural design criteria would include consideration of building profiles and design, exterior color and surface treatment, and exterior lighting and sign standards.

Flora Resources

346. A total of 44 plant species were identified within the Petition Area. Of these plant species, 28 (64 percent) are introduced, one (2 percent) is originally of Polynesian introduction, and 15 (34 percent) are native. Of the native species, nine are

indigenous (native to the Hawaiian Islands and elsewhere) and six are endemic (native only to the Hawaiian Islands).

347. Two vegetation types are predominant within the Petition Area. The older, more weathered pahoehoe lava flows, which encompass about 75 percent of the Petition Area are predominantly vegetated with koa haole and fountain grass scrub vegetation. Scattered throughout this scrub vegetation are shrubs such as noni (*Morinda citrifolia*), maiapilo, Christmas berry, and naio. A few kiawe trees (*Prosopis pallida*) along with the shrub klu (*Acacia farnesiana*) are also scattered among the scrub vegetation. Within the shallow pockets of soil are found plants of *portulaca pilosa*, 'uhaloa (*Waltheria indica*), hairy spurge (*Chamaesyce hirta*), Nata redtop grass, partridge pea (*Chamaecrista nictitans*), 'ilima (*Sida fallax*), and a thin layer of dried out mosses. Within a collapsed lava tube along the eastern boundary of the site is an 'ohe tree (*Reynoldsia sandwicensis*) and a few clumps of 'ala'ala wai nui or the native lowland peperomia (*Peperomia blanda* variety *floribunda*).

348. The 'a'a lava flow is sparsely vegetated with most of the plants occurring along the margins of flow where it abuts the older pahoehoe flow. Native shrubs found on the 'a'a flow include maiapilo or native caper (*Capparis sandwichiana*), naio or false sandalwood (*Myoporum sandwicense*), alahe'e (*Psydrax odorata*), and kolomona (*Senna gaudichaudii*). Other species include a lama tree (*Diospyros sandwicensis*) and huehue

vines (*Cocculus orbiculatus*) which are locally abundant in places. Introduced or alien plants include Christmas berry shrubs (*Schinus terebinthifolius*), fountain grass (*Pennisetum setaceum*), and hairy swordfern (*Nephrolepis multiflora*). An area within the southern portion of the site previously disturbed in conjunction with the adjacent quarry operation is also vegetated with Natal redtop grass (*Melinis repens*), koa haole (*Leucaena leucocephala*), and 'ohi'a trees (*Metrosideros polymorpha*).

349. None of the plants found within the Petition Area during the survey is a threatened or endangered species listed and protected by Federal and State Endangered Species Laws. One candidate endangered species plant identified as the ko'oko'olau (*Bidens micrantha* subspecies *ctenophylla*) was found within the Petition Area. To mitigate impacts to the four plants found on the Petition Area, a buffer zone will be established in the immediate vicinity of the *Bidens* plant located along the Petition Area's eastern boundary. Seeds and cuttings will be propagated from the other three *Bidens* plants located within the Petition Area to preserve its genetic material.

Fauna Resources

350. During a faunal survey of the Petition Area conducted by Rana Productions, Ltd. in March 2000, no native, endangered or threatened avian or mammalian species were detected within the Petition Area.

351. A total of 16 avian species representing 10 families were detected during

station counts. All of the species recorded are considered to be alien (introduced to Hawaii by man) to the Hawaiian Islands. All of the birds detected are common alien species found throughout the leeward lowland areas on the Island of Hawaii. No native, endangered or threatened avian species were detected within the proposed development site during the course of this survey.

352. The findings of both the avian and mammalian surveys were consistent with the present habitat available on the site.

353. There is the possibility that small numbers of the endangered endemic Hawaiian subspecies of the Dark-rumped Petrel flies over the Petition Area. The only mammalian species observed during the survey was the Indian mongoose, although various species of rodents are likely to utilize the site. Although not detected during the survey, the federally endangered Hawaiian hoary bat and Hawaiian hawk may fly over the Petition Area on occasion.

354. The potential impact that the proposed development poses to the endangered Dark-rumped Petrels is the increased threat of the downing of birds disoriented by exterior lighting associated with the project. To reduce the potential for interactions between nocturnally flying Dark-rumped petrels with external lights and man-made structures, exterior lighting within the proposed development will be shielded.

Recreational Resources

355. There are several State Parks in the Kona area. These include the Old Kona State Park, Kealakekua Bay Historic State Park, and Kekaha Kai State Park, Keolonahihi State Historic Park and Napoopoo Beach Park.

356. County parks in the Kona region include Disappearing (White) Sands Beach Park, Hookena Beach Park, Kahaluu Beach Park, Manini Point (Napoopoo), Milolii Beach Park, and Pahoehoe Beach Park.

Tennis courts are available at Greenwell Park in Captain Cook, Higashihara Park in Keauhou, and at Kailua Playground. There are several private, semi-private, and resort-owned golf courses in the area, which are also open to the public.

357. Approximately 450 berthing slips are provided for recreational and commercial vessels at Honokohau Small Boat Harbor located approximately 1.1 miles southwest of the Petition area at Honokohau Bay.

Scenic/Visual Resources

358. The provisions of the Services Organic Act of 1916, reaffirmed by the Park Services General Authorities Act of 1970 mandated the NPS to conserve the scenery and the natural and historic objects and wildlife therein.

359. The National Park is proposing to construct a visitor center. Based on the number of visitors to the Pu'uhonua O Honaunau National Historical Park, the Kaloko-Honokohau National Historic Park estimated approximately 500 visitors per day.

Noise

360. Ambient noise in the vicinity of the Petition Area is predominantly attributed to vehicular traffic along the nearby streets and the adjacent quarry operations south of the Petition Area.

361. The increased noise levels as a result of the proposed Kaloko Industrial Park Phase III and IV, and adjacent Kaloko-Honokohau Business Park are not anticipated to adversely affect any nearby noise sensitive uses, since the surrounding areas are comprised of light industrial uses and undeveloped lands. No significant noise impacts are anticipated from the operation of the proposed project.

Construction Noise

362. Operation of construction equipment will raise ambient noise levels in the project vicinity. However, since the surrounding areas are comprised of light industrial uses and undeveloped lands, no significant noise impacts are anticipated from the construction phase for the proposed project.

363. Mitigation measures, including construction noise limits pursuant to the provisions of the The DOH Administrative Rules, Title 11, Chapter 46, Community Noise Control (applicable only to Oahu) are applicable to the project.

Air Quality

364. The 1998 Annual Summary, Hawaii Air quality Data does not provide air quality data for the island of Hawaii. The Big Island has three special monitoring stations. The Kona Station is closest to the Petition area. The Kona Station monitors two pollutants: particulate matter (PM10) and sulfur dioxide (SO2). Levels of PM10 and SO2 were found to be well within Federal and State air quality standards.

365. In the immediate vicinity of the Petition Area, ambient air quality levels are affected by traffic-generated vehicular-related emissions in the form of carbon monoxide ("CO"), and periodically from the adjacent quarry operations located south of the Petition Area.

366. Ambient air quality levels in the immediate vicinity would be most affected by vehicular emissions in the form of CO generated by project-related traffic. Planned traffic and roadway improvements in the immediate project vicinity would improve traffic flow and consequently help in reducing CO concentration levels. Through restrictive covenants, the individual businesses within the proposed development will be restricted from using their subject lots in a manner that creates air

pollution, dust or emission of odorous or noxious matters as may be considered a nuisance to nearby lots.

367. Potential air quality impacts during construction of the proposed development will be mitigated by complying with the DOH Administrative Rules Title 11, Chapter 60, Air Pollution.

Adequacy of Public Service and Public Facilities

368. Schools servicing the project area include Kealakehe Elementary, Kealakehe Intermediate and Kealakehe High Schools located approximately 1.9 miles to the southeast of the Petition Area. The elementary school's capacity is 1,064 students, and the 1999/2000 school year enrollment was 898 students, putting the school at approximately 84 percent capacity. Kealakehe Intermediate School, with facilities for 1,078 students, is at 86 percent capacity with 930 students. Kealakehe High School opened in 1997, and is currently at 76 percent capacity with a student body numbering 1,119 in grades 9th through 11th. The High School will begin 12th grade instruction during the 2000-2001 school year.

369. The proposed development will not generate a substantial demand for schools as the work force is anticipated to be primarily from the existing population.

Wastewater Treatment and Disposal

370. Wastewater is a general term for human waste disposed through a

flushing toilet system. This waste is organic and carries nutrients, particularly nitrogen and phosphorus.

371. Disposal of wastewater in individual onsite systems, such as septic tanks and leach fields, will create a nutrient-rich source of local recharge to the groundwater basal lens.

372. Increased nitrogen and phosphorus concentrations in the groundwater impact the nearby ecosystems, including the ponds and other water resources in the National Park.

373. An individual wastewater system is a facility designed to receive and dispose of no more than 1000 gallons per day of domestic wastewater. Onsite individual wastewater systems include, but are not limited to, septic tanks and cesspools.

374. Individual wastewater systems, including cesspools and septic systems, are a major component of chronic nonpoint source pollution and may contribute both pathogens and nutrients to surface waters.

375. The DOH asked for the Commission's help in protecting the unique natural resources adjacent to the Petition Area, which are unable to be considered by the DOH under the rules of HAR 11-62 when approving individual wastewater systems.

376. The DOH recommended that the wastewater systems in the Petition Area remove as many nutrients as can reasonably be removed.

377. No State wastewater system regulations protect significant natural resources and the rules do not address the removal of nutrients, such as nitrogen and phosphorous, that may disrupt natural systems.

378. The State does not take unique resources, such as anchialine pools, into account when permitting wastewater systems.

379. Onsite individual wastewater management measures are not a DOH priority.

380. Cesspools currently are allowed by the State to be installed in the Petition Area.

381. The County was not convinced that the septic tanks and leach fields offered adequate protection of ocean waters and coastal anchialine ponds.

382. While the State laws and regulations on wastewater systems were inadequate for the protection of natural resources, the Commission recognized the following aspects as guidance for the Commission's action on this Petition.

383. The DOH seek to insure that the disposal of wastewater does not contaminate or pollute any valuable water resource.

384. The DOH seek to insure that the disposal of wastewater from individual

wastewater systems does not contaminate or pollute any drinking water or potential drinking water supply, or the waters of any beaches, shores, ponds, lakes, streams, groundwater, or shellfish growing waters.

385. By 2006, the State of Hawaii plans to implement revised wastewater system regulations (HAR 11-62) to require denitrification (removal of nitrogen) for all wastewater treatment systems that are next to nitrogen-limited surface waters, such as the water resources in the National Park.

386. A cesspool is inadequate for wastewater disposal at the Petition Area because cesspools have great potential for contamination of groundwater and coastal waters.

387. A cesspool is an excavated hole in the ground that receives raw wastewater and is designed to retain the organic matter and solids, but allows the liquid and pathogens to seep through its bottom or sides into the underground formation.

388. Cesspools release almost all of the nutrients in the wastewater into the environment and therefore are not adequate to protect groundwater.

389. A standard septic tank – a watertight tank that receives raw wastewater, removes gross solids, and discharges a settled effluent – is inadequate for wastewater disposal at the Petition Area because nutrient levels are not significantly reduced in a

septic tank. Septic tanks release nearly all of the nutrients in the wastewater into the environment and therefore are not adequate to protect groundwater.

390. Leach fields, also called absorption beds, are an important component of a septic system because some nutrients are removed from the wastewater in the leach field, provided that adequate soil is used. Soil is a critical component of the leach field used with a septic system.

391. A properly functioning leach field is capable of removing at least 80% of nitrates and 90% of phosphates from the wastewater before release into the environment.

392. A FAST wastewater septic tank system that includes an adequate leach field is an appropriate system for installation in the Petition Area because it removes a large percentage of nutrients from the wastewater before release into the environment, greatly reducing potential impacts on the natural systems makai of the Petition Area.

393. A FAST wastewater septic system is a typical septic tank equipped with an internal treatment system capable of removing nitrogen inside the tank.

394. A FAST septic system that includes a leach field, comprised of appropriate soil fill, provides the best protection for groundwater because of the removal of a significant percentage of nutrients from the wastewater prior to its release into the environment.

395. The FAST septic system is capable of a 60 - 70% reduction of nitrogen in the septic tank alone and the leach field absorption bed is capable of a further 80% reduction of nitrogen, or a combined total of up to 94% reduction of nitrogen released into the ground.

396. The FAST septic system is more effective at removing nutrients than the regular septic system proposed by the Petitioner.

397. The FAST septic system requires very simple, regular maintenance for its one moving part, the blower.

398. A maintenance program that ensures proper function of any wastewater treatment system is necessary to avoid breakdowns and prolonged unintended releases of organics, solids and nutrients into the environment. Lack of maintenance of an individual wastewater system can be a problem.

399. It is possible for a septic system to malfunction, releasing untreated nutrients and pathogens to the environment without the knowledge of its owner.

400. Septic tanks and cesspools are not monitored by the County nor State and are typically not under any maintenance schedule.

401. Taking advantage of economies of scale, installation of a FAST system, with a proper leach field, for 20 or more lots would cost less per lot than 20 separate standard septic/leach field systems.

402. Intervenor's uncontroverted testimony on cost estimates for the FAST system are reliable because the estimates were developed by a licensed engineer Mr. Michael Thalhamer.

403. Petitioner's engineer, Denis Shiu, the Petitioner's only qualified expert in this matter, estimated that a septic tank costs \$20-25,000 to install for a single lot in the Petition Area, but this estimate omitted the cost of a leach field.

404. Sending wastewater from the Petition Area to the Kealakehe wastewater treatment plant is preferable to any individual wastewater system because no nutrients will be released into the environment from the wastewater generated in the Petition Area.

405. The County will require the Petitioner install "dry" sewer lines in anticipation of future hook-up to the County's municipal wastewater disposal system.

Drainage

406. The terms "drainage wells", "injection wells", and "drywells" are interchangeable and have the same meaning, which is any well that injects surface fluids, i.e., storm runoff, into any geohydrologic formation. The County's standard for disposal of all surface runoff is through drainage wells.

407. Drainage wells, injection wells, and dry wells are basically just holes drilled into the ground.

408. Drainage wells provide a direct conduit to groundwater, and are sometimes drilled into groundwater.

409. Groundwater contamination from drainage wells is a serious problem because it affects drinking water and also streams and the ocean.

410. The design specifications of drainage wells does not inherently incorporate any structure or other design feature to remove petroleum, oil, or any contaminants contained in runoff.

411. Drainage wells do not help control nonpoint source pollution.

412. There are no State laws or County codes currently in place to ensure that pollutants carried with surface runoff do not get into the environment through groundwater. This lack of protection puts water quality and natural resources at risk where drainage wells are used.

413. There are no drinking water resources in or adjacent to the Petition Area.

414. State regulations governing drainage wells are based only on drainage capabilities, not on removing any hazardous substances.

415. Nonpoint source pollution, like general wash-down and polluted irrigation water, is not considered when permitting drainage wells.

416. The State does not do any monitoring of drainage wells. The State relies entirely upon the owner to self-monitor the drainage well for disposal of contaminants.

417. Drainage wells on the Island of Hawaii are subject to abuse such as dumping waste. The State has experienced significant levels of non-compliance with drainage well conditions and self-monitoring requirements and considers it a real problem.

418. Like the State laws, the County codes for drainage wells do not address protection of significant environmental resources, but rather solely consider flood control and volume of runoff.

419. County drainage well standards are only designed for flood control purposes and not for removing any hazardous substances.

420. The County does not consider nonpoint source pollution, like general wash-down and polluted irrigation water, in its review of surface discharge in development plans.

421. The County applies the same standards to address runoff whether the proposed development is in an urban area or next to a National Park.

422. There is no County monitoring system or owner/operation self-monitoring requirement for drainage wells.

423. Because the DOH has made no studies of the ecological impacts of drainage wells, a finding of no impacts to water quality in the Kona Area from drainage wells is not supported.

424. BMPs are measures, controls, and devices used to prevent pollution from being discharged into waters such as rainwater and surface water and then carried into streams, ponds, and oceans.

425. Structural BMPs such as oil/water separators and lined holding tanks or catchments are devices designed to collect surface water and remove such things as oils, greases, fines, silt, sediments, and other pollutants that adversely impact groundwater.

426. Structural BMPs are up to 90% effective at removing matter such as oil and grease.

427. Structural BMPs are a safeguard to prevent pollution and to relieve some of the non-compliance issues associated with self-monitoring.

428. BMPs also include education or training measures to aid in prevention of spills and releases.

429. Appropriate BMPs for the proposed development should specifically address the types of industrial uses anticipated by identifying structural BMPs to contain whatever pollutants might be released from the specific industrial use and to prevent any release into the environment.

430. Appropriate BMPs for the proposed development are filtration or infiltration measures, including flow-through based treatments such as filters, vegetated swales and other media filters and infiltrators. These require that surface flow be

passed through soil or suitable media capable of filtering pollutants prior to discharge or release into the groundwater. Vegetated swales consisting of suitable native plants, grass or ground cover could be installed to provide flow-through treatment.

431. The conditions imposed in LUC Docket No. A84-570/W.H. Shipman Limited are examples of efforts towards pollution prevention and BMPs to control pollution. The DOH supports these BMPs and other polluted runoff control measures.

432. This Commission cannot defer to the State or the County on this issue of drainage because neither the State nor the County protects the natural resources that are dependant upon clean water. The State does not require structural BMPs in drainage wells, even where contaminated runoff is anticipated from the permitted facility.

433. Petitioner proposed to install an unknown number of drainage wells in the Petition Area without adequate structural BMPs. This will be a potential source of groundwater contamination that may reach the National Park and adversely impact National Park resources. Added nutrients and organic contaminants will alter the quality of the groundwater leaving the development.

434. To mitigate the impacts of stormwater runoff discharging pollutants into the groundwater, BMPs capable of filtering pollutants prior to discharge or release into the groundwater must be used. These include lined holding tanks or catchment devices designed to collect and remove spills, oil/water separators to remove petroleum from

runoff; other on-site measures to control erosion and transport of fines, silt, sediments and other pollutants that could adversely impact groundwater or surface waters; and filtration or infiltration measures, including flow-through based treatments such as filters, vegetated swales and other media filters and infiltrators.

Solid Waste Disposal

435. Solid waste from the region is presently disposed of at the County of Hawaii's Puu Anahulu landfill located approximately 18 miles north of the Petition Area in Waikoloa. Refuse generated by the proposed project will be collected by private refuse collection companies and transported to the County's Puu Anahulu landfill for disposal. The landfill has adequate long-term capacity available.

Water System

436. Potable water use is provided by the County's Department of Water Supply from its North Kona Water System. Adequate water supply is currently available from water lines in the immediate project vicinity and two reservoirs along Hina Lani Street.

437. Proposed water system improvements include new water lines along the project roadways and extension of a new water line within the project connecting to the existing 20-inch water line along Hina Lani Street.

438. Water commitments for the proposed development have been secured

from the County Department of Water Supply in the amount of 510,600 gallons per day or 851 additional units of water at 650 gallons per day.

439. The proposed project's average daily water demand is estimated to be 328,000 gallons per day (gpd), with the maximum daily and peak hour flow demands estimated at 492,000 gpd and 1,640,000 gpd, respectively.

Highway and Roadway Service

440. Primary access to the Kaloko Industrial Park is from Queen Kaahumanu Highway at its intersection with Hina Lani Drive. The Industrial Park may also be accessed from the east via Mamalahoa Highway and Hina Lani Drive.

441. The State roads in the area and in the area of the proposed Phases III and IV of Kaloko Industrial Park are the Queen Kaahumanu Highway, portions of Route 190 on the mauka route between Kona and Waimea and a short segment of Kealakehe Parkway.

442. The Queen Kaahumanu Highway widening from Henry Street to the Airport Access Road is a high priority for the State and plans for widening this section of the highway are currently in the design phase. The State has appropriated \$10 million to acquire the right of way.

443. The project will be phased over a period of time with the first phase from Henry Street to Honokohau to begin in 2003. Completion of this first phase is

anticipated to take a least two years. The completion of the second phase - from Honokohau to the airport Access Road is anticipated for 2007.

444. Traffic signals at the intersection of Hina Lani Drive and Kaahumanu Highway will be energized within the next week.

445. The Petitioner's traffic assessment analyzed traffic conditions at three intersections in the vicinity of the Petition during the weekday AM and PM peak traffic hours (7:00 to 8:00 am and 3:30 to 4:30 pm) and identified potential traffic impacts resulting from the proposed project. The analysis is based upon the concept of Level of Service ("LOS") developed by the Transportation Research Board.

446. Levels of Service are defined by LOS "A" through "F", with LOS "A" representing ideal or free flowing conditions and LOS "F" representing unacceptable conditions.

447. The three intersections analyzed were: Queen Kaahumanu Highway and Hina Lani Drive; Hina Lani Drive and Kanalani Street; and Hina Lani Drive and Kamanu Street.

448. Queen Kaahumanu Highway is a 2-way, 2-lane arterial State Highway extending from Kawaihae to Kailua-Kona. A left-turn median storage and right-turn acceleration lane are provided at its unsignalized intersection with Hina Lani Drive. According to the study, the critical movement of the highway at this intersection is the

southbound left-turn traffic movement. Presently, this movement operates at LOS "B" during the AM and PM peak hour of traffic.

449. Hina Lani Drive is a 2-way, 2-lane County collector road on the Petition area's northern boundary, providing a mauka-makai connection between Queen Kaahumanu and Mamalahoa Highway. The critical movement of this approach is the westbound left-turn traffic movement. The westbound left-turn movement from Hina Lani Drive operates poorly at LOS "F" conditions during the AM and PM peak traffic hours.

450. Additional traffic from the construction of the industrial park would add to the congestion at the intersection of Queen Kaahumanu Highway and Hina Lani Drive.

451. The critical movement at the Hina Lani Drive and Kanalani Street intersections is the westbound left turn on to Kanalani Street and the through traffic movement that operates at the free-flow condition of LOS "A". The critical movement of the Kanalani approach to Hina Lani Drive is the left-turn and right-turn movement which operates at LOS "B" during the AM and PM peak hours of traffic.

452. The critical movement of both the eastbound and westbound traffic along Hina Lani Drive at the Kamanu Street intersection is the left-turn and through traffic

movement which operates at the free-flow condition of LOS "A" during the AM and PM peak hours of traffic.

453. Kanalani and Kamanu Streets are existing north south roads within the existing Kaloko Industrial Park Phase I and II. Both of these streets feed into Hina Lani Drive to the north. There is no road that runs parallel to Hina Lani Drive to the south that connects up with Queen Kaahumanu Highway.

454. There are no additional access roads proposed by the Petitioner to provide access to and from Hina Lani Drive to the Petition area. The County of Hawaii does not think it unreasonable to require an additional access road from the project to Hina Lani Drive.

455. There will be connecting north-south roads to the Lanihau project. The County of Hawaii does not think it unreasonable to require a condition of development that the Petitioner provides this connection.

456. The County depends on the developers to build the cross streets.

457. The State Department of Transportation ("DOT") planed to install a traffic signal at the intersection of Queen Kaahumanu Highway and Hina Lani Drive by 2001. Traffic operations at this intersection are expected to improve with the installed traffic signal and DOT's future plans to widen Queen Kaahumanu Highway to four lanes.

458. The left-turn traffic movement on the westbound approach of this

intersection is expected to improve from LOS "F" to LOS "B" during the AM peak hours, and LOS "C" during the PM peak hours. The levels of service at the other two study intersections are not expected to change since the traffic operations along Hina Lani Drive are expected to be similar to existing conditions. By 2010, Petitioner forecasted that traffic operations at these intersections are expected to be worse due to the increase in traffic accessing the proposed project.

459. The Petitioner recommended several measures to mitigate the impact that the proposed industrial park will have on traffic patterns. They are as follows:

Maintain adequate sight distance for motorists to safely enter and exit all project driveways and roadways; Re-stripe Hina Lani Drive at the intersection with Kamanu Street to create a left-turn storage lane for vehicles turning left onto Hina Lani Drive; Re-stripe Kamanu Street at the intersection with Hina Lani Drive to provide exclusive left-turn and right turn lane for the approach.

460. According to DPW, the 'Main Street' identified in the Keahole to Kailua Development Plan is intended to keep local traffic off Queen Kaahumanu Highway.

461. In the County of Hawaii's K-K Plan, Main Street is defined as a collector roadway, which provides for circulation between the limited industrial areas, which includes the Petition area and urban expansion areas to the north across Hina Lani Drive.

462. The County's current Implementation Strategy Plan proposes the widening of Hina Lani Drive to an 80-foot wide four lane road to be completed by 2020.

Public Utilities

463. While actual power requirements for the project will depend on the ultimate use of individual lots, using 4,000 kilowatt ("KWh")/month/lot, the Petitioner estimates projected power consumption for the proposed development at 329,000 KWh per month. Electrical power supply and service for the proposed industrial area will be provided via the Hawaii Electric Light Company's (HELCO) existing facilities in the adjacent Kaloko Industrial Park and the 69 kilovolt (kV) transmission line along Queen Kaahumanu Highway. A new substation may be required to service the proposed project.

464. Telephone service for the proposed phases III and IV of Kaloko Industrial Park can be provided using HELCO power poles and direct burial cables. Currently, service to the area is provided by GTE Hawaiian Telephone Company via trunk cables supported on HELCO's 69 kV poles mauka of Queen Kaahumanu Highway. Fiber-optic cables that are located within the existing Kaloko Industrial Park could be extended to the proposed project.

465. Cable service lines extend from Sun Cablevision's main plant in Kailua-Kona, only up to Honokohau Harbor. The service could be extended from the Kaloko Industrial Park entrance via a fiber-optic loop on Queen Kaahumanu Highway.

Police and Fire Protection

466. The Kealakehe Police Station, located less than 2 miles south of the Petition Area, provides service to the North and South Kona Districts. Fire protection service is provided by the Kailua-Kona Fire Station located approximately 3.6 miles southeast of the Petition Area. Although it is likely that the proposed project would require the occasional police and fire protection services, it would likely represent a minimal amount relative to the overall regional demand.

Health Care Services

467. The Petition Area is within the service area of the 75-bed Kona Community Hospital located in Kealahou, approximately 11 miles to the south. Although the hospital provides for most surgical needs, specialty cases are transferred to Honolulu hospitals.

468. Another medical facility in the region is the North Hawaii Community Hospital in Waimea. The Hospital has 50 beds and provides a full spectrum of acute care services, including a 24-hour emergency room, medical/surgical care, obstetrical/gynecological care, cardiac care, and long-term care.